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Medical Testimony as Viewed by a Trial Lawyer*

THOMAS DOWNS, ESQ.

MEMBER OF THE NEW YORK BAR

New York

I find this subject a peculiar one to approach. I was asked only a few days ago to make this address and to confine myself to this subject and I have had to eliminate nine hours of golf to give it some real thought. I have been speaking for fifteen years and it is a rule of mine never to make notes whether for a trial of two days or for one of twenty-eight days. I have made it a point to concentrate for I have learned that a great trial may be swung by the statement made or impulsive word said by a witness. From memory training I have found one can develop greater concentration on one's witness and one's jury and on one's doctor whose testimony occupies an important sphere in the courts of New York State to-day. In trying to write down my thoughts I find my mind becomes an utter blank after penning "Ladies and Gentlemen," so I shall have to address you without notes.

Why should I speak on the attitude of the trial lawyer toward medical testimony? Why is it necessary to do that? As we look over this situation it occurs to me that there should be no differences between the legal and medical professions when they reach the court room. May I stress an advisory mood when I say you are most frequently called in to testify in what kind of a case? An injury case which occupies at least 90 per cent of the time of all courts. We find a peculiar situation arises at times. As soon as a physician is called to treat a man who has been injured he knows from a viewpoint of common sense that eventually he may be required to enter a court room to testify. He knows that, as he starts with a patient who is seriously injured.

His attitude should be, "How can I cure this patient of mine?" Irrespective of consequences or of the amount of the verdict his attitude should be, "How can I apply my talents to cure this patient?" That thought

predominates in your mind medically and applying your thoughts along those lines you must go back to the days of your hospital training and, even though you are at the home of the patient, I say to you, you should in justice to yourself and your profession keep an accurate note of your visits, an account of the treatment you have given in order effectively to complete the restoration of that patient to health. If you do that you are accomplishing one result; you are accomplishing a cure to the extent that is possible under medical guidance to reach that point. You should then be in position, both medically and otherwise, to have the thought that one or two years afterward you must appear in court.

Both physicians and lawyers frequently say, "I shall remember all the details." I do not care how smart you are. Two years from now you will not remember details, treatment or details of the progress of the patient's condition; that is, if you are fortunate enough to have other patients thereafter. You should be prepared to tell the attorney for your patient when you treated your patient, when you made your first examination, what it disclosed, what you found, what were the objective symptoms and natural subjective symptoms that you knew must follow.

How could you detect subjective symptoms so you knew your patient was not a malingerer? Having done that you are telephoned to by the attorney and what should be your attitude? Your duty does not cease with actual calls on your patient, but if you know the patient has been injured and a lawsuit may result you should have consecutive notes to properly protect his material welfare in the courthouse when you are called there.

How frequently your whole profession is almost dragged into disrepute because of lack of intelligence in an ordinary situation when you are telephoned to by the attorney: "Did you treat so and so between such and such dates and can you get out your notes and prepare

* Read before the Society of Medical Jurisprudence at the New York Academy of Medicine, May 11, 1926.

yourself to answer questions in court about that patient?" It is your duty.

Your duty ends only when your patient has completed the effort necessary to health and happiness. If that duty is done why should doctor and lawyer conflict with each other? The attitude of the legal profession should be to give you sufficient time to prepare yourself; not to call you up at 10:00 o'clock and says "Be in the courtroom at 10:30."

Having done that you know there are certain questions that particularly require to be answered according to the rules of evidence. After you have described what you have found in the patient we ask the hypothetical question. "Can you state, to the extent of your opinion, if this condition will be permanent?" That should be frankly answered. I say there have been more compensations disgracefully reduced and more cases lost because of a certain belief on the part of some physicians that if he frankly says, "Under those circumstances it is my opinion that having continued for this length of time, for a year, a year and a half, or two years, although I am not prepared to say it will be permanent, I am prepared to say it will continue for a long time to come. It may clear up in two years; it may take ten to fifteen years."

In my experience as a trial lawyer, jurors have told me the verdict is based on their opinion of the honesty of the physician. When you have told the attorney what the condition is, you can enter the court room in dignity and confidence knowing what your position is to be. The attorney addresses you with the same dignity and confidence knowing where he stands. What is the situation? Your testimony can grow and mature into a great and beneficial result and become a matured factor in the life of our courts and the life of your patient. Or, on the other hand, it may result in ectopic pregnancy.

In a case I tried recently, and I refer to this case because of the attitude of the medical men, a lady had been operated on and brought suit for malpractice. I was in this case as counsel. She was operated for an ectopic pregnancy and continued to remain ill and became weaker. She went to another hospital and was examined and they thought she had appendicitis. They advised operation. These are actual facts. As she was prepared for this operation and was being taken to the operating room an unusual condition arose.

When the operating surgeon opened this lady's abdomen on the right side and inserted his finger he withdrew a surgical pad about 18 inches in diameter. This surgeon was called to the witness stand and was asked the simple question, "When you decided this lady was suffering from ectopic pregnancy what did you do?" Instead of describing the operation he started to tell us that he put on his gown, his mask, his gloves, sterilized his hands and gloves and went on with a long rigamarole. But this had nothing to do with this pad existing in the abdominal cavity. After ten minutes of this the jury became amused and finally he spoke of counting the number of pads and instruments and then completing his operation and starting to take everything out; but he was so long getting them in and out that he forgot his count of the abdominal pads.

When his attorney turned him over to me my cross-examination was simple. I said, "After listening to you for an hour and a half, did it occur to you that when you told us the number of these pads going in you had one less coming out and that is the point of this case?" His testimony was thereafter absolutely useless. He was protecting his reputation and I did not object to that. He was under fire.

What was the position of the second operating surgeon? This lady while convalescing in the hospital asked the surgeon repeatedly what was the matter; was her appendix out. Finally, one of the nurses let the cat out of the bag, that a pad had been taken out of her abdomen and action for malpractice was started.

I called up three physicians whom the hospital records showed had attended that operation and not one of them would tell me a thing that he saw; I could get no response over the telephone to my question, "What did you see?" This lady was a patient of two of them, of her attending physician and of the surgeon who operated on her. None of them would tell us anything with the result that I had to subpoena them, put them under oath and then say, "Doctor, what did you see occur on such a date, at such a time" and each one then had to admit that they had seen a pad pulled out.

Why should that exist in the medical profession? Is that your attitude toward the courts of the State of New York and of the United States? Is that your duty toward your patient? Is that justified?

What should be the attitude of the trial lawyer to such medical testimony?

I say, as a matter of opinion, such examples as that indict your profession. If that is your code of ethics strike it from your list if it prevents you from honestly describing what you find in treating your patient.

After these physicians had admitted what they had seen, what was the next step? Two doctors took the stand and stated that in curetting the wound the doctor must have forced this pad up through this cavity and it would surely have caused ultimate death. When gentlemen of your profession are required to answer those questions we go into old cases and prepare ourselves. We have to devote a great deal of time and many nights preparing ourselves on medical questions. What did the jury do? Brought in a verdict against the surgeon. Was this justified? Answer this in your own minds.

Let me cite a few cases that have occurred in my experience. One was the contrary of this. This is a case where the doctor went to the other limit in behalf of his patient. The case was tried in Brooklyn. A chauffeur was driving a truck which was struck by another vehicle and the chauffeur was thrown from his seat and flung up against the front of the car and his back was bruised.

When we came to trial a year and a half after the accident what were we confronted with? The physician took the stand and gave a long list of his qualifications. After he had described the contusions and bruises over the back and hip of his patient and said the man was nervous, although away from work only three weeks after the accident and back at work ever since, he testified that the man's bladder and kidney were permanently injured. I was somewhat surprised because I thought the bladder was not apt to be subject to trauma. After he had answered the usual questions I cross-examined the doctor and asked "Is this man's bladder permanently injured?" "Are you sure of it?" He replied in the affirmative. "You have not told us anything about the condition; was there any evidence of blood or of a break-down in the structure or did you see anything indicating a breakdown in the urine or in any discharge?" Answer, "No." "What did you do for him?" "I started to give him boric irrigations after the fourth day and gave them to him for over a year."

"Was there any injury to the lower part of the spine, to the nerves that might communicate the desire for evacuation of the bladder?" "No."

"Did you find any evidence of paralysis?" "No."

"Why have you kept up the irrigations for a year?"
"I thought I ought to do it. That ought to suit you."

I said, "If it is satisfactory to you it suits me." Surely you gentlemen do not put your stamp of approval on that kind of nonsense! This was a doctor of slight experience and little propriety who made your profession ridiculous.

Following this idea of the practitioner trying to overdo it in behalf of his patient, we had a case in the Bronx which shows how medical testimony may air this idea. By a falling elevator a young lady had a leg fractured in a building on 5th Avenue. We did not dispute this. We had to defend it because she wanted to sue. I warned the jury that I thought there would be exaggerations in the case. When I went on to try this case I said to the jury: "We owe her money and I want you to fix on a reasonable amount, say \$4,500 or \$5,000." As we got into the trial a physician took the stand and testified she had the most complete neurasthenia that ever existed in medical history. She took the stand and answered steadily every question as to the accident; then she was followed by the doctor who testified she had everything in the world the matter with her. I asked the usual questions as to the alienist's accuracy and he answered them all. His testimony made her so nervous that she made a disturbance in the court until I jumped up and called out as loud as I could an objection. I said, "Stop this nonsense; this is a part of the exaggeration I warned against," and she forgot her neurasthenia and called me a liar right there in court. The jury decided against her and brought in a verdict for the defendant because the doctor was ridiculous. The doctor testified as to what she ought to have and when she started to demonstrate this she lost her case. The case is now in the Appellate Division.

Here is one of the most startling experiences I have had. A dejected boy suffered a broken leg when struck by an automobile. The leg healed with perfect union but $\frac{1}{2}$ inch shortening. As you know we enter the courtroom on a complaint which indicates what you think is the matter with your patient and can prove. We knew, therefore, that the broken leg existed, for we had a bill of particulars and a sworn complaint. In court I found the boy had curvature of the spine, scoliosis and other diseases which were hurled over so fast that all of us, including the jury, were dizzy. The court directed that an x-ray picture be taken of the spine. An x-ray picture was produced showing the curved spine. I asked the x-ray expert how the picture was taken and I brought out the fact that the picture was taken with the boy standing up leaning on the leg that was shortened.

When the doctor took the stand I asked, "Did you pose a fake picture to fool this jury?" He denied it at first but finally admitted it. He had posed the boy standing with the spine curved. This boy was entitled to a verdict for a permanent injury consisting of a half-inch shortening of his leg but the jury disagreed.

Can you imagine such things existing? Do you wonder that judges and juries and trial lawyers make comments on doctors? Am I justified in saying I have felt like shaking some medical men I have had under cross-examination?

One of the most distinguished surgeons I know was called in a case of far-reaching importance. In one of the cities of New York State a child was sent out to buy ice-cream, which was eaten by the father, mother, two brothers and sisters and some visitors. Two died and the others were sick. A little boy in the family who had been bad and had been sent to bed for punishment without any ice-cream was the only one who did not

suffer. You can see how serious a situation presented itself. We had to consider the mother and father losing two children, their own sickness and the other far reaching effects. I represented the ice-cream company. In preparing for that case I consulted the physicians who had analyzed the remains of the ice-cream. What was I confronted with? As we reached the courtroom we found out that a few days after death the two children were embalmed and autopsy performed two days after that, but we were charged with killing them because they died of gastroenteritis. Someone had to say there was a germ that would produce gastroenteritis. So the most distinguished physician I know took the witness stand and testified that the germ that caused gastroenteritis had produced tyrotoxin. In cross examination, I asked him when he had an opportunity to isolate the germ producing tyrotoxin. I found he had not attempted to analyze cream for this germ or for tyrotoxin since he was a medical student. Tyrotoxin had killed the children and caused the gastroenteritis which was manifest at autopsy, but he was further compelled to admit that after the deceased had been embalmed with formaldehyde through the umbilicus the germ could not be discovered. As to the enteritis, he said it existed at the time of autopsy. Here was a gentleman prepared to swear away the reputation of this company without proof. No man has been found able to isolate tyrotoxin in cream. Why did this distinguished man take such a stand? All the five cases were thrown out of court because the testimony was so ridiculous under cross-examination.

I drew this same medical man again on a case in Brooklyn some two weeks afterward. A lady had lost the rubber heel from her shoe and tripped and hurt her knee. She had fallen on her side but in court it appeared that she had suffered everything but dandruff after that fall. The doctor was an expert in this case. The attending physician had described the condition of this lady and she was entitled to a verdict. This gentleman took the stand and in his bright, clever way, after the attorney asked what he found, said he took an x-ray and found she had separation of the sacro-iliac joint and ante flexion of the uterus. How could such an injury result from one's heel coming off resulting in a slight fall and a wrenched knee? He was compelled to testify that all the conditions he found were attributable to a confinement some fifteen years before. The jury disregarded his testimony as to the knee and gave her a very small verdict. What is the effect of this on the medical profession and on the law?

Most of you have heard of the Malbone Street wreck. We had some interesting cases from that. One man was injured on the head, shoulder, body and hip and laid up in bed for three months. After he left the hospital he was home for two or three months and the testimony showed he had developed the serious condition of constipation. Action was pending when on the 29th of June he was taken to the hospital for acute appendicitis and died about 8 o'clock in the morning. Action was then brought on behalf of the widow who claimed the accident was the cause of the death. We found an interesting situation. The Consolidated Railroad and the B. R. T. kidded me about it. I found in talking to two or three doctors, especially his attending physician, that this man, prior to the accident, had been a healthy, strong man and that his condition of constipation developed after the injury. We traced his history at home through his wife as to his taking medicine. We found out in tracing this that from the time of the injury to the time of death that the accident taking this man from active life laid him up, the constipation developed and

we found that constipation is one of the main inciting causes of appendicitis. In Kelly's book, however, we found only one case in which trauma was the direct cause of appendicitis. The Consolidated Railroad called five physicians who were in court for three days. Finally, the one who was to make me look silly took the stand and testified he had performed twelve of fifteen hundred operations for appendicitis. I asked each doctor if in his opinion appendicitis was a circulatory disease and was constipation a producing cause. Finally, the wonder who had been there three days, took the stand. When he took the stand I said, "How much are you getting a day for your testimony?" He said, "\$250." "And you are a wonder at appendicitis. Do you know anything about it?" "I think I do." "You feel there is no other physician better qualified to discuss appendicitis?" "I don't think there is." "You are going to get \$750, so suppose you give us the worth of some part of that and tell us what you know of appendicitis. He failed to answer but asked a few silly questions instead. Finally I said, "If you can tell us nothing about appendicitis, leave the stand; we are through with you." Why did those five doctors take the stand to say this injury could not be a cause for the death? This lady recovered a substantial verdict for the death of her husband.

In another instance I tried a case of a boy who had his leg cut off. He also had a skull fracture, but there was no medical proof on behalf of the plaintiff. The doctor who had attended him, in violation of his oath, came to court prepared to take the stand, as did a trained nurse. Much to my surprise, he said, "I don't think he had a fracture of the skull because it does not affect his walking." I said, "Don't you know, as a matter of common sense that the fracture is nowhere near the motor center of the brain? Why do you say he did not have a fracture, because it has not affected his ability to walk?" He finally admitted that he was asked to go the limit in testifying against the plaintiff. The plaintiff, however, obtained a verdict of \$30,000.

I started to cross-examine another distinguished man when he was called by a railroad company to testify against a client of mine who had a skull fracture and developed intensive tremor. The attending physician claimed there had been an inflammatory cerebral sclerosis and I asked this expert if this could have been the cause. He took the stand in a domineering way, he answered: "You might as well use the expression 'a dirty clean boy' for inflammatory means soft and sclerosis means hard. I cannot answer the question." I said, "What is inflammatory cerebral sclerosis; can it be a process if not a disease? Is it a fact that anybody who uses that term would be more silly in your eyes than I am?" He said, "Yes, absolutely." I said, "Then anybody who uses that term is silly and ridiculous. Will you read the underscored words in the third edition of the book you have edited?" He read them, and I said, "Who is ridiculous; you or I?"

Why go that far? Why is it necessary when the doctor has the lawyer at a great disadvantage going that far to belittle him? It is only necessary to answer questions intelligently and accurately.

Of course, it was necessary to speak about these experiences. What else do we have. Who is the first gentleman we meet in the courtroom? The expert. What a wonder he is. I say to you that most of the cases in the city of New York to-day are being tried by lawyers who have devoted a number of years of their lives to trial work. I have spent nights for weeks preparing myself for a hard trial. The lawyer is also coached in his preparation. I say to you that none of these conditions would be necessary if we were all

frank with each other. The expert should be a highly qualified, scholarly gentleman prepared to give his testimony in simple words of pure English. When such a scholarly expert comes to court, and there are such doctors, he has the respect of everybody before whom he appears, whether for or against him.

If a lawyer hears that Dr. So-and-So is going to testify he says, "Now, we will have the truth." There are many who have that reputation. But there are many more who have not and those are the ones you should find some means of curbing and teach the difference between what is right and what is wrong and that since they have entered the medical profession they should consider that profession first and not the almighty dollar. From my experience in the court room, the physician who enters the courtroom knowing what was the matter with the patient and knowing what that condition is and describes it simply has the respect of every man in the court room. As he leaves the stand you can hear the remark, "There is a doctor who told the truth and who knows what he is talking about."

Let me refer to one other thing. There seems to be a mistaken notion in regard to subpoenas. Many doctors do not show up after receiving a subpoena. They disregard it saying, "I am a physician." This is a very dangerous attitude. I have seen four or five committed to jail until they could be admitted to bail. If you receive a subpoena you must reply to it or send word to the court. The court has constitutional authority; you must recognize it when it speaks. The only time you are excused is when you have a case you cannot leave or when you are actually on the staff of a hospital or medical institution or charitable society, and your knowledge of the case was acquired solely in that institution. Then your testimony must be taken before a referee. If you are called to an emergency operation, send word to the court and you will be excused. In my younger days when I got a blow from a hockey stick I did not have an ecchymosis. The jury does not understand that. Why do we have to have a comminuted fracture? A severe laceration and a suture for it? State the fact that there was a cut which needed eight or ten stitches and the jury will have a clear idea of the injury. When you go to the courtroom, if you wish to establish a reputation for intelligence, say "There was a black and blue spot as big as your fist"; or "the bone was broken into a number of pieces." I hope the general underlying thought of frankness, wholesomeness, intelligence, preparation, will underly your testimony in the courtroom in the future. God alone can create life, but it has been given to you by Him and Him alone to prolong and perpetuate it. You are endowed with those talents by Him who will judge you later. Use those talents so that when you go before this Judge those who have confided their lives to you will testify to your fairness and honesty and that you have used those talents to the best of your ability.

Discussion

Dr. Charles Edward Nammack:

I would like to take exception to some of the things Mr. Downs has said this evening. In regard to his criticism of the three physicians who refused to give an attorney any information regarding their patient over the telephone, I should like to ask him if he would give any information about one of his clients over the telephone. If so, he would be doing a very wrong thing, and the three physicians were perfectly justifiable in their action.

Mr. Downs' description of the manifestations of the lady on the stand as those of neurasthenia, to one trained in neurology, does not reflect much credit on the doctor who drilled her, for she gave a beautiful picture of hysteria, a very different condition from neurasthenia. I think he was mistaken in alluding to her as a sphinx; the sphinx suffers from a permanent disability known to trained medical minds as *asphasia*; she is a

(Continued on page 184)

Self Readaptive Movements or Eumorphics—II

Plain Directions for Restorative Body Movements Designed to Overcome Hindering Conditions Caused by Disuse, Disorder, Disease, Partial Paralyzes, Injury or Post-Operative Disabilities.

J. MADISON TAYLOR, M.A., M.D.,

FORMERLY PROFESSOR OF PHYSICAL THERAPEUTICS AND DIETETICS, MEDICAL DEPARTMENT, TEMPLE UNIVERSITY

Philadelphia, Pa.

(Concluded from June issue)

The muscles and the structures of the chest, shoulder girdle and trunk work so largely in unison that it is better they be trained together. They are reciprocating mechanisms or instrumentalities. Those of the trunk and pelvic girdle may also be reckoned with as one group for functionings. The union of the shoulders and arms to the main stay of the body—the backbone—is only by its muscles and not by joints. The same as in a horse or other mammal. Hence the only way they can maintain their proper adaptation is by the tone of the muscles.

Voluntary movements are uniformly desirable for them in order to release limitations of junctures and remove contractures and restrictions; to encourage expansion of the chest, and to readapt and make pliant those of the neck. Any limitations of, or hindrances to, thoracic pliancy exerts compression on the contained organs, e.g., lungs, heart and primary blood vessels. So too do the truncal and pelvic muscles need free and full movements to afford play for the abdominal organs, and blood vessels. Likewise the reactions of movements and pauses to keep in order the pelvic organs.

Procedures

First to open and expand the chest, to lift the ribs:

Stand, or if weak sit on a stool; clasp the hands behind the back and just above the waist line, one hand grasping the *side* of the other at the finger joints, but *not* encircling. A certain amount of play, of "come and go" of the fingers is needed as the arms straighten out. Otherwise the wrist becomes twisted.

Start the movement by forcibly pulling the clasped hands (at the upper waist line.) Pull steadily and increasingly apart at the same time thrust downward the hands as far as they will go. Count one, two, three, four, five, then hold in full tension while counting six and seven. Then relax, shift the hands, raise them again to the waist line, and repeat the motion—hands pulling apart, chin thrust up.

As the arms move downward and apart, the chin is thrust up till a line from under the chin is vertical. A full inch can be thus gradually gained in the upthrust. This up-push of the chin emphasizes the vertical stretch of the front structures; also there is a corresponding down-pull of the back straightening (erector spinae) muscles. Thus the upright attitude is compelled, each side being equally stretched, the hindrances become removed and the habit of erectness is reformed.

These movements are quite easy of performance, especially when demonstrated. By doing them an increasing control and power is given over all the structures involved; also a wide opening and uplift also in depth of the chest. The ribs become nearly horizontal; the shoulders are—at the same time—forced down in the lateral midline (anterior-posteriorly), and learn to fall into and remain in normal position when in repose.

After being performed often enough an easy well poised attitude is thus reacquired. The length of the back is increased by releasing the limitations due to stooping attitudes. The more rigid or contracted of the chest structures give way, and also slouching shoulders become raised. At the same time any chest or ab-

dominal organs which tend to sink down from their natural places will be pulled up—replaced—by improvement in the tone of the accessory (both outside and inside) supports.

Next movements are needed to restore tone and vigor to the *trunk* or abdominal muscles, i.e., the front—external abdominal walls—and the posterior, those lying in front of and to each side of the backbone (the psoas, iliaci and the quadratus lumborum), also those accessory supports to which the internal organs hang (the visceral attachments).

Another group of movements—described below—achieve many of the same advantages but are much easier, more suitable for those who have some marked weakness or defect of an organ, especially of the heart, such as the following:

Lie on the back; clasp hands over the top of the head; draw up the bent knees, at the same time draw in the breath and hold it. This lifts the diaphragm and enlarges (expands) the chest. When in this attitude breathe outward slowly as possible, kick out each leg alternately lowering only an inch or two at each kick, till both the chest is emptied and the legs sink down to the horizontal and come to rest at the same time.

This series brings alternating compressions to bear on each of the two sides, and a graduated squeezing upon the contained viscera, by pressure from both front and rear, as well as each side.

Repeat these movements in their entirety at least three or four times and, as strength grows, they should be done ten to fifteen times at each seance.

They are peculiarly valuable for restoring competence to the evacuation of the bowels. Unless some marked structural hindrances exist, they will restore the peristaltic and defecation rhythms. Along with this all the abdominal and pelvic viscera will benefit greatly; especially in cases of displacement, dropped organs (enteroptosis) which affects at least four out of five women, two out of five men.

Similar excellent groups of retraining movements for the chest, trunk and pelvic viscera, devised and used by W. Curtis Adams, is as follows:

Lie on the back, buttuck as nearly as possible to a vertical wall (protected by some substance as a piece of compo board about three feet wide and four feet high). Clasp the hands over the top of the head, and draw up both legs on the abdomen. Then thrust up each leg alternately; the heel being in contact with the compo board, straight up and down, sliding the back of the heel to the vertical; starting from the one knee on the chest, the other up and down.

He also uses a movement he calls "scissors." This consists of lying on the side, legs thrust out straight, then alternately thrust each leg forward and then back as far as possible.

All these movement groups accomplish much the same effects, with such differences as make them all worth while, useful to alternate at different times. The salutary effects of these are far more marked than can possibly be known until they have been faithfully tried.

Movements for Rotating and Stretching the Back Bone, Done While Sitting Oriental Fashion, Heel to Heel, Then Bending and Turning the Trunk.

Sit on the floor (or bed surface) legs apart, knees pointing outward, heels touching each other, forming a square or quadrilateral. Clasp hands behind the head; rotate the body and thrust each elbow—alternately—down so as to touch the floor at the center of the square.

This touching of the floor can rarely be accomplished at first, unless one is extraordinarily flexible. By persisting, two or three times a week, the various hindrances or obstructions will yield. Almost any one, not afflicted with a diseased backbone can come to touch the surface with each elbow.

This movement also turns (rotates) the body half way round—at the waist line chiefly—but all the associated (rigid) structures give way a little, so far as their design permits. They stretch the back, mobilize the hip joints and restore astonishing degrees of original pliancy. Also the chain of sympathetic nerves which run up and down on each side of the backbone are stretched. This traction repeated, once in so often, proves of great value in restoring promptitude and completeness in the reflex circuits.

How to Teach and Train in the Art of Relaxation

A multitude of disorders and diseases, acute and chronic, physical as well as mental or emotional, are complicated by states of unconscious over-tension in the muscles. This constitutes a burden—often a heavy one—on the organism by inducing leaks in the energy content.

Often it is the chief obstruction to functional competence. Just so soon as this source of persistent over-stress is removed, so are the other hindering causes at work reduced in character and severity. The engines and mechanisms thus come back to adjustment and can do their appointed work.

Contrariwise, unless or until this stress is reduced or removed, the ample and various reparative forces cannot come back to equilibrium.

When the human organism is distressed or diseased it is out of gear and the flow of biotic energy hindered, lowered, deviated or repressed.

Functions can be helped much by courageous determination alone, but the process is only partial and is exhausting, all the power available being needed to fortify the defense and repair mechanisms. Take off the hindrances, fortify the muscle power, and relief comes, vastly earlier and more completely.

In short, poise or tranquility, a mobile equilibrium, a serene state of mind and emotions, as well as of body, is the essential condition of repair or recovery.

This release of over-tension may be the one and only way to get the repair forces by and over the hindering conditions. That ubiquitous and distressing state of uneasiness, anxiety, doubt of one's self, dread of failure to fulfill one's expectation of one's self—mis-called "nervousness"—is the product of subconscious overtension—often a spasticity—leading to exhaustion, though prolonged was of duplex counteracting movements.

Note how complex and distressing are the sensations which follow attempts to hold a part of the body in a fixed attitude, such as pointing the finger steadily and long at an object, or on elevating one leg and standing on the other, or on holding the neck firmly to one side. The distress is both emotional and motional. It piles up stresses to almost an agony till relieved through release of tension.

Those persons afflicted with what may be called psychic hypertension show plainly in their attitudes and gait a cramped hunched up state, a characteristic awkwardness obvious at a glance. The head is thrust out and lowered, the shoulders raised, the chest sunken, the neck drooped and the features strained.

The same condition is seen—more graphically—in one during emotional perturbation and self suppression. Such stresses bear heavily on endocrine competence, hence disturbed nutrition of the glands themselves, and the organic processes they govern and regulate. The vegetative and autonomic distribution is thrown out of rhythm, the secretions lowered and vitiated. Thus body toxins accumulate and alter for the worse. Repair forces are all held in abeyance. Thus it is plain that the largest single contribution to recovery is by relieving this strained attention (psychic hyper-tension), or self suppressed tension.

It is all very well to urge such a sufferer to relax, to smile, to forget it. One who has unbounded confidence in the physician, along with a naturally well poised or not too much diseased organism, may respond. Far better results follow in using some such device as I have below described and long used.

While of value in acute conditions it is of blessed efficacy in most protracted and chronic disorders. After a brief description remarks will be made on the situation in which psychic hyper-tension are found, their nature and phenomena.

The Ceremonial of Reacquiring Poise in Mind, Body and Conscious Estate, Set Forth in a Few Words

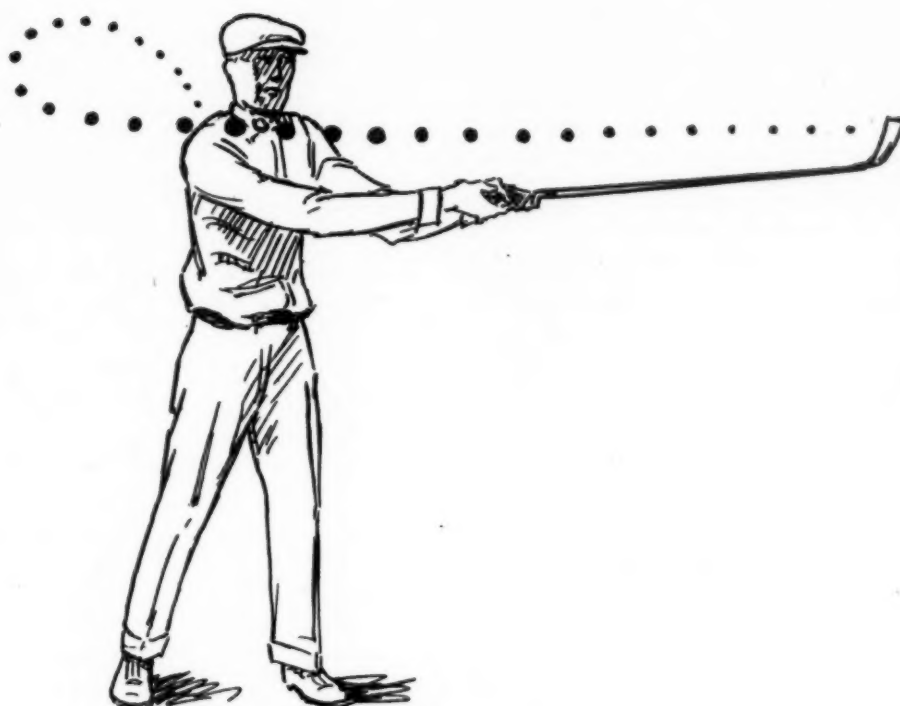
The patient lies down at ease, on the back. Tell him you propose demonstrating how completely he can control his limbs and other parts while at complete rest, in the negative phase of no effort, and in entire repose, provided he wishes to do so.

Tell him you will then lift his limbs and he must offer no help whatsoever; that you wish to use induced (touch) movements on him, and he is to permit it; that you wish to move them in any direction or position; that his arms, legs and other parts belong to him. They are, or should be, under his full control whether to do or not to do. Now he is to direct them to lie at full ease, offering no help whatever.

Ask him to breathe five times a little fuller, deeper and slower than usual, between each procedure. This is merely to distract his attention to the rhythmic acts of respiration. Tell him to breathe, five times. Then do you lift his right arm, move it about; and lay it down. If he stiffens or helps, try it again till he fully submits and lets go. Again breathe five times; then pass to the left arm; then again breathe five times; then pass to the right leg; breathe five times; then to the left leg and breathe again.

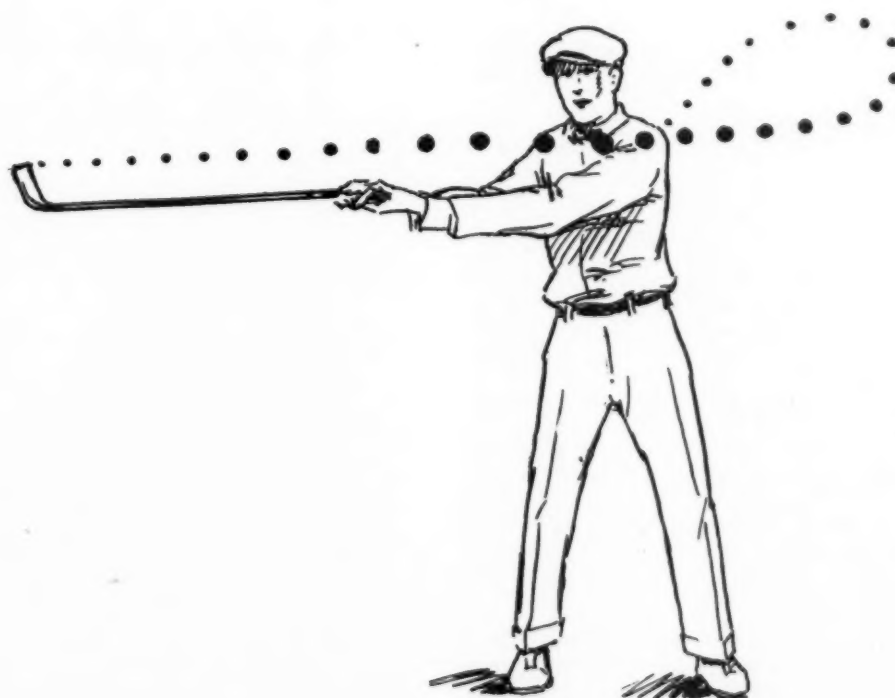
Now explain the action of the partly, or semi-voluntary muscles. Stroke or touch the abdomen. Tell him he can also acquire some very useful control over the muscles of the intestines; that they also can be tranquillized, and their peristaltic action can be regulated. Trace and explain the direction of the intestinal action from the head of the colon to the anus.

Explain the google-google sounds (borborygmi) as being releases of local over-tension and the passing of gases through a narrowed area. Thus the act of defecation can be measurably trained. Breathe again five times. Then conclude by explaining the uniform hypertension of the neck muscles. Bid him leave to you the placing of his head to the right, or left, or sidewise. Soon the neck rigidities will disappear.



EXERCISE 1—SHOWING A HORIZONTAL SWING FROM RIGHT TO LEFT

This movement must not be confused with the usual understanding of a stroke. Repeat the swing about ten to thirty times in almost a complete circle on a level with the eyes or shoulders. The graduated lines indicate that the greatest velocity is attained when the swing is directly in front of the body



EXERCISE 2—SHOWING A HORIZONTAL SWING FROM LEFT TO RIGHT

Alternate this movement with Exercise 1, for these exercises are designed to develop both sides of the body equally or symmetrically. The grip should be changed when switching from one movement to the other, the usual golf grip of the right hand below the left being suggested

Finally bid him lie perfectly passive and relaxed while you give him a general summary of the whole ritual and the urgent need of his cooperation in regaining full control to the last cell and fluid and propulsive act. Let him sleep a few minutes and review the ceremonial.

Thus a masterful domination over every structure and function can be achieved. Then any other measure needful will work harmoniously and in a way, and to a degree, surprising and gratifying.

"Phantom," or "Shadow Golf" As a Superior Convalescent Remedy

The practice of golf strokes, with certain slight changes—as here recommended—serve well as a valuable type of movements for training and co-ordinating the whole body in balanced conscious control, to get rid of bad habits, and as an aid to acquire more effective habits of posture, attitude, motor power and proficiency. In particular, their practice will enable one not only to better direct body energies, but to save and renew them so that they cause practically no fatigue, the power reserves being progressively enhanced. The whole seance takes about ten or fifteen minutes.

These reconstructive movements can be profitably practiced in the home, or yard, at a time or frequency, at least for a few minutes every day or two. They will be followed by a sense of well being which encourages serenity and sleep.

They are devised as of three series; all primitive and natural to man. They can be commended to all those who, for any reason, have become out of condition and can not stand alone.

Done as urged, with the utmost deliberation and economy of effort, using only about half the power which almost any one is tempted to use, they can do no possible harm and give much steadily increasing benefit.

Directions

Use an iron club, or a light baseball bat. Perform each of the three series of movements for a few times—about ten or fifteen—daily, or several times a week, within doors, with the windows open; or better, out of doors.

The Stance, Or Standing Position. (Show by personal demonstration.) Keep in mind that the "stance" is the art of carrying and shifting and distributing the weight (or load) of the standing body, and is a series of careful economic placements of the parts in positions of advantage for performing the movements. Keep the knees straight, but not too rigid, while reaching for an imaginary ball. Grasp the club handle lightly but firmly. Extend the arms as fully as possible so as to just reach the ball (or object aimed at) no more. Make every movement with deliberation, and with only about half the force which one is tempted to use. Bear in mind that the worst faults in golf are due to getting hunched up or cramped, and using twice too much force. Observe any *real* champion and you will be impressed by the fact that he, or she, never seems to smash, as does the "duffer" or tyro.

Series I. Swing the club on a level with the eyes (along the horizon) in a wide sweeping movement, dying out over the opposite shoulder, say, a dozen times. Then change the hand grip, swing in the opposite direction the same number.

Series II. "Pitch-Fork Movement." Stance: grasp the club, its head resting on the ground at the apex of a triangle with each leg, about where a ball would be. Then swing up and back and over one shoulder, turning the head half way round so as to look at an object directly behind. Replace the club, and swing up and over the opposite shoulder, turning the head and body as before.

Series III. Approach Shots. Strokes from right to left, then from left to right. These movements are all done with restraint, holding back the blow so as to propel a ball only so far as determined, were a ball used. Aim at an object where the ball would be; grasp the club handle firmly but easily; keep all parts in poise; reach out pretty far, that is, keep the body up and back, and extend the arms to the utmost. Aim to touch the surface of the ground, but not to dig in the least. After making a dozen or more strokes from right to left, change the grip and swing from left to right.

All strokes should be made with completeness, and freedom of the arms, no pulling in whatever, in the Series I and II. In Series III (Approach Shots) the chief point is precision with restraint. Never push through at full force. Then, when playing the game on the links, you will find you have acquired full deliberation and restraint; far more useful than power.

A useful point to bear in mind is that, if a finger becomes rubbed or blistered, surround it with a piece of Z.O. plaster, half an inch wide.

Whereas in golf on the links all movements are made from one side to the other, these, for the purpose of symmetrical training, are made from both sides—say right to left—ten times, then shift hands and swing from left to right a similar number. Then both, alternately. This conduces to symmetry, body balance, equalizing the training of both sides for power and proficiency. Omit lifting the off heel until playing on the links.

Be sure to use only so much of effort or power as is necessary, and no more, both in grasping the club and in performing the movements. This gradation is important in acquiring poise, controlled action, and in learning to save energy. Later on one can increase the power exercised, even to the fullness of one's strength, yet always restrain a little. For the first few movements in each series aim to be as accurate as possible at each stroke. When warmed up, greater power and range, or sweep, can be used; also as one becomes stronger and surer.

The object here is to win masterful control of your mechanisms, and use them to the best advantage, as well as to the economy of, and enhancement of, your energies.

You will need all the stretch and turn of your body and neck (rotation) that you can get, so as to secure the fullest flexibility, pliancy and controlled reach you can possibly secure. Also, you will thus overcome any latent stiffness, and can carry the load of the standing body gracefully. Extend the arms fully; keep the chest well up, the shoulders down. Make the play almost entirely from the wrists.

Above all aim to acquire flexibility and freedom, and width of range through wrist action. Later, the shoulders can come more largely into play, but not until the wrist action is mastered and habitually accurate and free.

When turning movements are a feature—as in Series I and II—aim to get as much rotation of the waistline as possible. Graduate the force and velocity from poise (zero) to full tension in the middle of the stroke, then "die away."

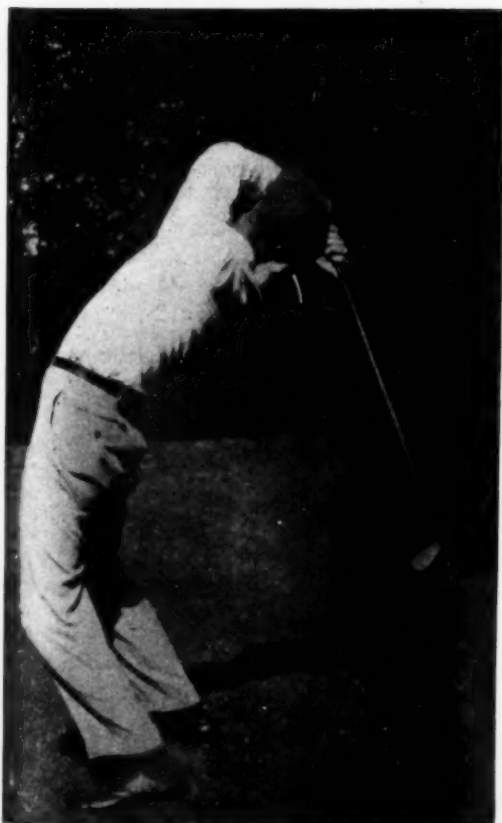
The worst faults in golf are due to getting the back hunched up, or cramped, in frantically gripping the handle of the club till the wrist motion is hindered, and in wasteful effort by smashing at the ball.

One of the most desirable accomplishments is to graduate the power of the stroke (or practice swing) from a nice poise to the maximum you intend to use (only about half you may think necessary) then die away over the opposite shoulder.



EXERCISE 3—SHOWING THE "PITCHFORK" SWING

Start with the clubhead resting on the ground and with the body vertical and in the position for the ordinary golf stroke. Swing the club up and over, and behind the body. Do not touch the shoulder and check the club at the end of the swing



EXERCISE 3—OVER THE RIGHT SHOULDER

Is recommended as the first movement, gripping as for an ordinary right to left stroke. Then change grip and repeat

The action should be as free as though the weight of the iron head were attached to the hand by a cord, like a sling for casting stones, with no back pull except to guide the circular action.

By practicing these movements in a tranquil spirit (balanced urge) one can readily pass from the tyro to the expert stage, quite omitting the 'duffer' stage.

In this, as in every similar endeavor for proficiency, make a plan of action before doing anything; then rehearse to yourself as you start to do it. Be regular and systematic all through; aim for precision at each stroke; be faithful to the self-imposed task of balanced urge and control; and be constant in the effort to get and keep all the structures well in hand, and accurately movable.

Hand Wrestling

Hand Wrestling. A superior means of achieving body balance and, at the same time, courage, aggressiveness, and strategy, is through hand-to-hand wrestling. After showing this to the late Dr. S. Weir Mitchell he had me many times apply this to well-advanced convalescent patients who were lacking in self-confidence.

Any two individuals may compete on a fairly equitable basis, since to win does not so much depend on power or weight, as on quick, prompt decisions as to direction and throwing one's power just where the other is unprepared to defend. I have often been surprised to find a frail, seemingly weak person able to overcome me.

The contestants stand opposite each other, the outer side of the right foot touching the corresponding side of the other's right foot; the right hands of each are clasped. The object is to force the other person to shift the left foot, opposing the left hand and foot of the other. In



EXERCISE 3—OVER LEFT SHOULDER

Then try this movement with both grips as in over right shoulder exercise to a point level with the buttocks

this attitude one can feel one's opponent's intentions similarly to that of the foil of an adversary in fencing with foils.

The first object is to size up the opponent's aptitudes; to maintain a vigilant poise. Then to suddenly pull, push, or rotate or twist with the wrist and shoulder, throwing the weight wherever the other seems off guard. Victory is most likely won for the lighter or weaker one by allowing the adversary to complete the movement being made, and to suddenly compel him to *go a little further than he aimed*, and to press him in the direction of his effort. This adds a side twisting movement. The opponent is rarely prepared for this, and the rear foot is thus easily displaced and the bout won. Then shift the hands—the left to the left, and the left foot to the left foot.

The physician or teacher can readily estimate just how much more the delicate person can endure. This can be done for a few moments at a time. Nothing confers confidence and well contained body-balancing more effectively. In particular, this way is achieved a keen valuable appreciation of light touches.

Centrifuging the Fingers as a Remedy

Whirling the arms—wheel fashion—is an efficient means of increasing local circulation and repair of sick or sore fingers and nails. Do this, say a dozen or twenty times, then holding the hand aloft vertically for a few moments, it throws a low tide of blood—phagocytes and other cells—to the fingers, which, by the reverse process, promptly ebbs away.

Thus the notoriously slow circulation in the finger tips rapidly fills and empties; the stagnated vessels thus are cleansed of blood.

This very simple device has proved for me and others excellent means of achieving what is often much needed and in a way nothing else does as well. It is of special value because the patient can do this at any time or place. It is the full equivalent of that most curative measure—the contrast bath—dipping the fingers in hot and cold water alternately. This last measure is often not obtainable. Hence the stagnated condition remains neglected.

It has proved highly efficacious in various states of sluggishness in both acute and sub-acute, or in chronic disorders, e. g., gouty or other infections or delayed repair after injury. It enhances delayed nutrition as in disorders of the finger nails, brittleness, eczema fissum, onychia, etc.

It also helps mightily in overcoming coldness of the fingers, by mechanically distending the vessel walls and enhancing elasticity of the vessel walls, hence of the return currents.

It also enhances the local heat making and heat distributing mechanisms, and reflex circuits. It also materially relieves many painful and distressful states.

A bitter personal experience "put me onto" this. An infection of a finger on my right hand had nearly subsided; while traveling in Europe this finger received an injury and the thing flamed out till my hand was crippled. Then the idea of centrifugation suggested itself. Soon—in two weeks—the trouble was gone.

It is interesting to note that often rapid rotation of the arm, the color of the skin of the fingers becomes a bright red. After extending it up vertically for a few moments it becomes almost white.

The procedure occupies less than five minutes. This repeated two or three times a day brings about such gratifying effects that it seems worthy of record.

Restorative Exercises for Foot Troubles. Especially Those of the Arch, So-Called Weak or Broken or Fallen Arch or Flat Foot.

They are useful also in some varieties of bunion or other deformations due to original defect aggravated by faulty shoeing, costume compulsions and distortion decrepitudes.

The two feet of man constitute his real "human understanding." On them he carries the weight of his whole body. By their emplacement or replacement, he adapts and distributes his "body load."

Since man's instruments of self-progression lie solely in this one pair of lower extremities, their integrity is of priceless value. Any impairment of them handicaps his freedom of choice as to his corporal situation.

Among the significant points or phenomena of man's walk, or gait, the normal bipedal or plantigrade progression of his advance, retreat or "sparring"—stepping from side to side or turning—in order to reach a situation of better advantage to perform movements, are these:

The body should advance, or otherwise change its posture or attitude on, or near to, a level or horizontally. The head—or index of centrality or poise—should move up or down the least possible. Otherwise a waste of motion, of foot pounds of energy, occurs, a needless lifting or lowering of the body load, hence squandering of power better employed elsewhere.

In order to achieve this ideal gait the toes should turn in slightly, at least not turn out; the points of contact with the surface should be the outer edges of the feet; the hips or pelvis bone should be and remain nearly level—not more than 30° from the horizontal.

The knee which falls behind in the step forward should become practically straight as it passes behind a vertical line of support. Thus the flexor or pulling muscles are made to do their fair share of work on a parity with the extensors.

In ordinary thoughtless walking the push muscles, extensors, do about 80 per cent or 90 per cent of the work and the pull muscles only about 10 per cent to 20 per cent. Unless there is some good reason for this disparity any disproportionate overwork of the extensors should be modified to advantage. The action should approximate a 50-50 basis in order to be economic and effective. Also the foot should come in contact with the ground surface all at once—flat—so that the stress should be symmetrically disposed. When the body load is rightly distributed this is the case.

If—on walking along a thin floor—the impact of the foot is noticeably jarring, the weight is maladjusted, and rests too much on the heel or ball of the foot.

In the act of running the tendency is for most to bear the weight too much on the forward part of the foot, to "run on the tip toes." This is wasteful of energy, also it indicates an excess of "nervousness," or prodigality of energizing, hence a squandering of force to no good purpose.

The human foot is now—and has been for untold ages—used (as described) for a load carrier. By original design it was for use as one of the four extremities, which gradually was reduced to two. The upper extremities gradually evolved into hands. For hundreds of thousands of years, however, the lower extremities also functioned as grasping organs.

Even now, primitive people, especially those who go barefoot, retain a large measure of grasping power with their feet. The functional efficiency of the feet are thereby much amplified. Likewise they are emancipated from foot troubles except of original deformation.

It is therefore obvious that the one way to get rid of acquired foot troubles is to return to—as nearly as possible—the same, or similar conditions, of using the feet. The chief of these is to cultivate the latent power of grasping, at least just enough to keep the prehensile mechanisms in fair shape to maintain balance, or interplay of the foot structures.

In the process of foot trouble we may begin by getting our own feet back to normal. The first and the best way is to walk barefoot and practice a grasping action with the toes in as we climb a declivity. Also in running and in walking to place the foot flat down all at once, the toes turned slightly in.

As has been pointed out by Gerald Stanley Lee (in his book: "Rest Working") the incomparable runner, Paavo Nurmi, runs with his feet perfectly flat. To this he attributes, rightly, much of his ease and economy of effort as well as his speed and endurance.

I am told by a Swedish gentleman—himself a great athlete—that this way of placing the feet by northern peoples is due to skiing, in which one main effort is to keep the toes well up all the time. This fixes the habit.

Mr. Lee makes a further point—and important it is—that whenever one "runs on his toes," i. e., on the forward part of the foot only, that one is putting far too much strain on one group of muscles, makes them overwork. This produces over-stress, waste energy. It also is an indication of commotion in the emotions.

In this connection I would point out that in tip toe action all the stress is upon the *extensors* and not fairly shared by the *flexors*.

The origins to which foot arch troubles are attributable are—among others—these:



EXERCISE 3—AS FROM THE REAR

As the club carries through turn the head, neck and body at the waistline till the eyes fix directly behind the head when it started the lumbar vertebrae

(1) Some primary constitutional or developmental inadequacy. Fat, corpulent people are compelled to carry more weight than their feet are designed for.

(2) Some acquired weakness or injury, which affects the feet, have been aggravated.

(3) By carrying the body load too soon after a weakening process, as an acute infective (fever) disease, or other deteriorative condition. The weakened structures give way and the arches are let down less or more.

(4) To certain small but definite extent, the erroneous teaching or custom or fashion of turning the toes outward while walking impairs foot competence. This error was long taught by military trainers and dancing masters and "teachers of deportment."

Specific Recommendations How to Train Weakened Arches

Having come to realize the nature, direction and extent of the problem, the prime objective is to acquire the habit—at least as a training measure—of properly and carefully placing the feet; also in practicing grasping movements with the toes.

A simple and easy beginning can be made by standing barefoot on a step, the feet projecting over the edge from the base of the toes. Then alternately grasping with the forward part of the foot, then with the other, until the toes gradually come into contact with the vertical surface of the step. Then relax and grasp with the other, and repeat so many times, then also two or three times a day.

It is well to lean sidewise *away* from the foot which is grasping. Then lean to the other side and grasp with the

(Continued on page 182)

The Problem of Subtotal Gastrectomy for Peptic Ulcer from a Medical Standpoint*

A. GALAMBOS, M.D.

New York

In treating peptic ulcers of the stomach and duodenum, the unsatisfactory results attained by measures of internal medicine serve to prepare cases in the prospective hope of a more promising result by means of surgery. In the effort to improve results already reached, surgery has gradually resorted to more radical and more venturesome operative measures. The operative risk, added to the unsatisfactory results after operation has been performed, brings the patient back again to the internist, to make good what the surgeon has failed to do.

Both internist and surgeon have their respective experiences in the field of ulcer-disease, although the material and the stage of the disease are not identical, and this is to some extent the cause of the wide range of difference in judging the case and in stating operative indications. The surgeon, as a rule, has no experience of that great majority of ulcers which heal without his aid. On the other hand, the medical man does not again see the successfully operated cases, except later those in which recurrence or other complications have taken place. It is difficult, often impossible for both the surgeon and the physician to follow up cases in their later course, enabling them to form a definite opinion as to the respective value of their therapeutic interferences.

Gastric and duodenal ulcers, as regards appearance, are anatomical diseases; in point of still obscure etiology, they belong to the domain of constitutional diseases. As diseases with anatomical bases, they may well be ranged with surgical diseases; as constitutional diseases with concurrent functional disturbances, they belong to the realm of internal diseases.

The surgeon, as a rule, is satisfied with the results of operative procedure; the medical man none the less with the results of his treatment; the patient often with neither of them.

It may be stated once for all that in a large proportion, especially of chronic cases, *definitive and permanent* cure cannot be achieved by either treatment, medical or surgical. However, a considerable percentage can be healed, even though temporarily only, or at least can be benefitted. It should be borne in mind that spontaneous cure may also occur in untreated cases. On the other hand, there is conclusive evidence that peptic ulcer may exist for a length of time without causing the slightest complaint; and if ulcer can exist without any symptoms, where is the proof that in treated or operated cases, if the symptoms have subsided, the ulcer has actually been healed? It might just as well be assumed that the ulcers are still present without exhibiting symptoms.

Whether or not an ulcer can heal in the anatomical sense, opinions and observations are much divided. The main difference of opinion turns upon the age and stage of the ulcer, because an acute ulcer or an ulcer in its first manifestations has a strong tendency to heal. Aschoff found that hemorrhagic erosions of the gastric tract may merge into or may be considered as the first manifestation of a gastric ulcer. There is a long step from this superficial mucous erosion to the chronic, recurring, indurated ulcer. The healing tendency of this

latter form is very doubtful, although Stewart of London found acute and chronic ulcers equally frequent in their tendency to heal. In contrast with these findings Crohn's observations deserve our attention. He examined 34 specimens of gastric ulcer, removed by Berg by means of subtotal gastrectomy, and *none* showed any tendency to healing. Another series consisted of 39 cases of duodenal ulcers, of which only seven showed such a tendency.

In my opinion the chronic, indurated ulcer, embedded in the neighboring organs, has very little healing tendency in the sense of an anatomic cure. The clinical course of the disease is certainly independent of the actual stage of the healed or unhealed condition of the ulcer. If a patient with chronic ulcer of 25 or 30 years duration complains of symptoms of an acute recurrence of the disease 30 or 40 times, each time with an average duration of 4 or 8 weeks, who would believe in such a case that the ulcer has healed 30 or 40 times in succession, and broken open just as often? It is much more probable that the ulcer was never healed. Ulcer symptoms periodically recur, alternating with perfect well-being, in an ulcer-patient with an anatomically stubbornly persisting ulcer.

I make a discrimination *between ulcer and ulcer-disease*. The ulcer refers to the pathological and anatomical findings, which may persist in spite of treatment, especially in the chronic stage. Ulcer-disease refers to the clinical picture, which may entirely or at least temporarily be cured.

I shall draw a parallel between ulcer-disease and cholelithiasis or nephrolithiasis. Stones may be present without causing any symptoms. Sometimes they are chance findings at autopsies, and especially when no signs of an ulcerative disease have previously been complained of. It is well known that in calculous disease the severe attacks are brought on by accessory inflammatory processes in the gall-bladder or the renal pelvis. When the inflammation is subdued, the stones do not cause symptoms any longer.

Similar conditions may be present in ulcer-disease at a time when no provoking factor is manifest. Whether an accessory inflammation of the gastric mucosa may lead to the painful crisis is not known; so much, however, holds true, that inflammation or catarrh of the gastric mucosa—whether cause or consequence—is a frequent findings in ulcer-disease, and therefore the causative significance of catarrh cannot entirely be denied and its possibility must be taken into consideration. Faulty diet and psychic effect are certainly of paramount importance in provoking this result.

Specific, chronic gastritis characterized by lymphoid infiltration, abrasion and hemorrhage of the gastric mucosa, pictured by Berg as the most important feature encountered in gastric ulcer, does not seem to me to be satisfactorily proved to be in causative relationship with the development of the ulcer, since Adolph Schmidt and Kokubo—as emphasized by Aschoff—long ago called attention to the frequent occurrence of these metaplastic intestinal lymphglands in the stomach. I am inclined rather to look on it as an expression of the general lymphatic constitution, a constitution which is etiologically so important in producing peptic ulcers.

* Presented at the New York Academy of Medicine before the American-Hungarian Medical Ass'n, Feb. 16, 1926, discussing Dr. A. A. Berg's paper "Radical cure of gastric and duodenal ulcer."

Presence of an actual gastritis furthermore cannot be substantiated by examination of the gastric juice or gastric content, which does not show signs of gastritis. It is well known that free HCl and pepsin do digest mucus, but only to a limited extent, and we find masses of indigested mucus in cases of actual chronic hyperacid gastritis, but practically never in peptic ulcer. Mucus and free leucocyte-nuclei and snails are microscopical findings only contained in a few mucous shreds.

In the absence of conclusive evidence, the significance also of a focal infection in the etiology of ulcer cannot be corroborated, and I would refuse "a limine" the characterization and the consideration of gastric ulcer as an acute infectious disease, not only because there is no fever, no leucocytosis, nor any other sign of acute infection, but also because I do not see in the presence of streptococcus findings in the wall of the ulcer anything but the expression of a saprophytic process, which may take place at any time and at any place in the tissue or in the wall of a damaged or a necrotic organ or structure.

The significance and the prognostic value of the acidity following subtotal gastrectomy, which is emphatically accentuated by Berg, may deserve our fullest interest, not only because it throws light upon the important and long discussed question of the mutual interrelationship existing between hyperacidity and ulcer, but also because it enabled Berg to give a probable explanation for those cases of peptic ulcer, in which the same operation was performed by other surgeons, but with the results in some of the cases remaining unsatisfactory. Berg assumes that, as in these cases the free HCl did not disappear entirely, this fact is responsible for the failing response after operation. Accordingly, lack of HCl and ulcer exclude each other; but on the other hand it may be emphasized that mucous erosion, erosio hemorrhagica, as an expression of the vulnerability of the gastric mucosa, is not met with more often in any other disease than in achylia gastrica, and if hemorrhagic erosion has a causative significance in ulcer etiology, or in some cases may be considered as the first manifestation of the ulcer, there seems to be a "contradictio in adjecto" in such a relationship of the facts.

Functional secretory disturbances such as hyperacidity, hypersecretion, continuous hypersecretion may persist all the time, regardless of the stage of the disease, whether in a free interval or during a painful period, proving that secretory disturbance has little to do with the sensory disorder.

The medical treatment of peptic ulcer finds its further indication in the circumstance that, contrary to the general teaching the annoying requirement of a strict rest in bed for a month may with safety be omitted in cases of chronic, recurring ulcer, since ambulant treatment while the patient is allowed to do his daily work yields just as good, or possibly even better results than we used formerly to observe when medical treatment was combined with strict bed-rest. This means a great deal to most patients financially. The favorable psychic effect and the greater feasibility of performing gastric lavage or giving treatment by means of the Rehfuß tube, if indicated by sluggish motility, hypersecretion, pylorospasm, etc., are other factors to the advantage of the ambulant treatment.

Healing, or at least well-being can be achieved, even if the ulcer persists in unchanged form. *Anatomical healing of the ulcer is not necessary to effect cure of the ulcer-disease in a clinical sense.* Accordingly, surgical removal of the ulcer is still less required to accomplish the healing of the ulcer-disease. The attack provoking

factor can be combatted after a few days' treatment, even in a severe and painful case, and diet and some medical treatment may keep up in such a way as to assure complain-free intervals for several years.

The tendency of ulcer-disease to improve is enormously great, although the tendency of the ulcer itself in the chronic stage to heal is relatively small. Internal medical treatment, consisting of diet, medicine, and, if necessary, local treatment through Rehfuß tube, naturally combined with rest in bed in acute or in special complications of the chronic stage, will assure satisfactory, often astoundingly good and lasting, if not permanent benefit; and therefore it claims for itself peptic ulcer of the stomach and duodenum as diseases to be treated by all means by internal measures and only in exceptional, strictly circumscribed cases to be referred to the domain of surgery.

These indications are, as is well known, perforation, frequent and abundant bleeding, pyloric stenosis, organic hour-glass-formation, cancerous involvement or suspicion of cancer, and failure in results after a conscientious and long continued internal treatment. In weighing operative indications as the final resort, the social standing and the expressed willingness or desire of the patient for an eventual operation deserve our full consideration.

If operative measures are indicated, I am in favor of those procedures which yield the most result with the least risk. Gastroentero-anastomosis with an average mortality of 5 per cent deserves attention, especially in cases of duodenal ulcers, as strongly advocated by Balfour. Other operations on the stomach show greater death-rate, and it is questionable whether the results obtained are in proportion to the higher operative risk. If Berg can perform subtotal gastrectomy with a mortality of less than 6 per cent, with no recurrences among 400 cases, this seems to me a marvelous achievement. Still I am concerned as to whether the same operation in the hands of other skilled surgeons, who may lack the exceptional ability of the statistics creating surgeon would not result in a death-rate at least double its present rate.

If operation is indicated, the question arises whether or not the more radical methods should have the privilege to the more simple. This question is closely related to the problem of cancerous involvement of the primary simple ulcer.

This problem of such high practical importance is characterized by very wide range of difference in the opinions of the respective authors. While Zenker, and recently especially the Mayo-Clinic, assumes that most gastric cancers develop on the foundation of a primary simple ulcer, Aschoff, Kocher, Eiselsberg, etc., on the contrary have found a coincidence between the two conditions very rare (about 2-4 per cent). As intermediate between these extreme views, I mention Friedenwald and Stewart, who found a precancerous simple ulcer in 7, that is in 18 per cent of their cancer cases. General clinic experience indicates cancerous development on an ulcer ground to be a very rare occurrence. It should be emphasized, however, that cancer of the stomach is often a microscopical finding only, and not even the surgeon is in position to be able to diagnose the presence of a cancerous involvement at the time of performing a resection.

The question of the frequency of cancer occurrence in resected ulcer is of paramount importance because, if it should actually prove a frequent coincidence, that would be an argument for the performance of a more radical operation, possibly of a subtotal gastrectomy, as against a gastroenteroanastomosis in cases in which operative

(Continued on page 183)

Examination of the Feces

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The diagnostic value of a clinical analysis of the feces is not generally appreciated. In its passage through the digestive canal food is reduced by various chemical and bacterial transformations until it is ultimately reduced to waste products destined to be eliminated from the body as useless or injurious. These final metabolic products together with other products of oxidation are or should be expelled from the body as fast as they are formed. The fecal mass varies widely in different individuals according to the character of the food and the habit of going to stool.

If the total evacuation is to be studied the defecation should be passed into a warm receptacle. If intestinal parasites are being sought the examination must be made as promptly as possible because amoeba coli or trichomonades can be diagnosed only by seeing their characteristic movements, and these cease when the stools become cold. By the use of a warm stage the amoeba may be kept active.

In routine examinations where a number of specimens are to be studied a saline should be given before breakfast, that several liquid stools may result.

If a rectal speculum is introduced a quantity sufficient for one examination can usually be obtained, or in diarrheal conditions a small amount may be collected by means of a rectal tube introduced and allowed to remain a few minutes.

Composition of the Feces

Feces are derived from several sources, namely:—

1. The unchanged residue of animal or vegetable tissue used as food; such as hairs, horny and elastic tissues, most of the cellulose, woody fiber, spiral vessels of vegetable cells and gum. Proteins are never found in the feces with a moderate diet.

2. Portions of digestible substances, especially when these have been taken in too large amount or when they have not been sufficiently broken up by chewing, portions of muscular fibers, ham, tendon, cartilage particles of fat, coagulated albumen, vegetable cells from potatoes and other vegetables, raw starch, etc. All foods yield a certain amount of residue, as, for example, white bread, 3.7; rice, 4.1; flesh, 4.7 potatoes, 9.4; cabbage, 14.9; yellow turnip, 20.7 per cent. Some fat is nearly always present in the feces in the form of fatty acids, and to a small extent as calcium or magnesium soaps. The amount of fat found depends upon the amount of fat ingested and upon the amount of bile secreted.

3. Products of intestinal secretion, namely:—cholestrin probably derived from bile, urobilin or stercobilin derived from the bilirubin (pigments) of the bile and other decomposed products of bile pigments, which do not now yield the Gmelin reaction (nitric acid test), as well as the altered bile acids. The reaction, however, may be obtained in pathological stools, biliverdin, glycolic and taurocholic acids occur in meconium.

4. After a milk diet and also after a fatty diet, crystalline needles or calcium combined with fatty acids and chalk soaps constantly occur, even in the suckling, and even unchanged masses of casein and fat occur during a milk diet.

5. Among the inorganic residue, soluble salts rarely occur in the feces, because they diffuse readily, among these being common salt and other alkali chlorides, the

compounds of phosphoric acid and some of those of sulphuric acid. The insoluble compounds—of which ammonia comagnesic, or triple phosphate, neutral calcic phosphate, yellow-colored lime salts, calcium carbonate and magnesium phosphate are the chief forms. Some of these insoluble substances are derived from the food, such as lime from bones, and in part, they are excreted after the food has been digested.

6. Products of bacterial action. These comprise the entire series of fatty acids from acetic acid to palmitic acid, further, lactic acid, succinic acid, glutaric acid, leucic, tyrosin, hydroparacimarinic acid, para-oxyphenylactic acid, phenylpropionic acid, phenylacetic acid, phenol, paracuosol, indol, skatol, skatol-carbonic acid, ammonium carbonate, ammonium sulphite and conjugate glucuronates. These bodies impart the disagreeable fecal odor to the mass.

7. Micro-organisms in great quantities are present and often make up a considerable portion of the total fecal solids. The bacillus coli communis predominating. Also parasites and their ova.

8. Mucus, detritus and epithelial cells. These cylindrical cells of the mucous membrane are sometimes almost intact. Blood, pus, gall stones, etc., are sometimes found.

9. Purin bases—guanin and adenin—which come directly from the food and also from the metabolism of the tissues. These are increased on a diet rich in purins (meat extracts and thymus), but are also found on a milk diet.

10. Water. The consistency of the feces varies with the water content, which fluctuates between 68 and 82 per cent. It depends less on the water drank than on the vigor of intestinal peristalsis, the tone of the intestinal vessels and the state of the intestinal epithelium.

Gases

Gases developed within the digestive canal together with the air swallowed with the food and saliva are important factors in the process of formation of the feces. These gases result from fermentation and putrefactive activities of the bacteria within the intestine. As this development of gases is due to decomposition of the food stuffs, it follows that the quantity and kind of gaseous mixture varies with the nature of the diet.

Oxygen of the swallowed air is rapidly absorbed by the blood through the mucous membrane of the stomach and is absent from the intestinal canal. Carbonic acid from the blood is also given up into the air of the stomach and partially mixes with the duodenal gases. Ruge analyzed the intestinal gases of man, as given off per anum as follows:

| Gas | Milk Diet | Flesh Diet | Vegetable Diet |
|-------------------|-----------|------------|----------------|
| C.O. ₂ | 16.8 | 13.6 | 34. |
| C.H. ₄ | 0.9 | 37.4 | 44.5 |
| H. ₂ | 43.3 | 3. | 2.3 |
| N. ₂ | 38.3 | 45.9 | 19.1 |

Carbonic acid occurs in large quantities, especially after a vegetable diet by

- Cleavage of carbonates, lactates, acetates and citrates;
- Alcoholic fermentations of glucose;
- Butyric fermentation of lactic acid;
- Diffusion from the capillaries of the mucous membrane of the intestines.

The hydrogen so abundant on a milk diet is due to butyric fermentation of lactic acid. Methane which is developed after a diet of meat and vegetables, originates in the decomposition of acetates and lactates and of cellulose, nitrogen is always present, though it varies much in quantity with different diets.

Quantity of Feces

There is a wide variation in the daily quantity of feces eliminated, depending on the amount and kind of food ingested. Numerous attempts have been made to find the average composition of feces from a diet containing just enough protein, fat and carbohydrates to keep the body in normal condition. Subjects should be placed upon this test for at least forty-eight hours before a specimen is taken. The following is the diet of Schmidt:

Breakfast:

Half a liter of milk and 50 grams of crackers.

Lunch: (mid-forenoon)

Half a liter of oatmeal gruel consisting of 40 grams of oatmeal, 10 grams of butter, 200 grams of milk, 300 grams of water and one egg, which is to be strained.

Dinner:

125 grams of chopped meat lightly cooked, 20 grams of butter, 250 grams mashed potatoes, containing 10 grams of butter and 100 grams of milk.

Lunch: (mid-afternoon)

Same as breakfast.

Supper: Same as mid-forenoon lunch.

Even during an absolute fast a considerable amount of fecal matter is formed in man. Human feces in fasting are yellowish brown balls, of medium consistency, with little odor, and resemble the feces of a flesh diet. Upon a flesh diet the feces are small in amount (140 grams) and dark in color, while upon an exclusively vegetable diet they are largest amounting to 500 grams. On a mixed diet the feces of 24 hours weigh about 170 to 200 grams.

Vegetable foods are much richer in substances indigestible or difficult of digestion, so that larger quantities are taken to satisfy the needs of man and a larger residue is left in the intestine. An excess of diet alters the amount of feces. A superabundant meal although it consists wholly of digestible substances, leaves more excreta because part of the meal escapes the action of the digestive enzymes and fails to come in contact with the absorbing surface of the intestine. On a mixed diet one-seventh to one-eighth of the ingested food is normally excreted.

Human feces with a few exceptions consist chiefly of excretory products of the intestine and not of the alimentary residue. The quantity of feces depends principally on the nature of the food, some kinds requiring more succus entericus for their digestion than others. It seems more accurate to differentiate foods into those which cause the production of much or little feces than to speak of foods which can be more or less assimilated. Steeh (1853) was the first to note that fecal matters contain substances which have a toxic action on the living body. The unquestionable therapeutic value of purgative waters is due to their exciting the excretory function of the intestine.

Consistency and Form of Feces

The normal pasty or dough-like character of the human stools molded to the shape of the bowel as long sausage shaped segments or as a series of boluses closely massed together is dependent upon the amount of water present. A semi-fluid stool may be normal if the diet is largely vegetables.

A vegetable diet containing 80 to 85 per cent of water affords a much softer feces than a proteid diet containing 60 to 65 per cent of water.

Very liquid stools produced by laxatives are, of course, abnormal. Such diarrheal movements often stratify themselves, liquid constituents above and solid food below, but often the upper layer is only urine. Very hard stool (scybalor) indicates an abnormally long residue in the colon and excessive absorption of it including water, until the mass is evacuated as small balls like sheep dung, due to lightly packed fecal matter becoming friable. A large quantity of feces may stagnate in the rectum and distend it enormously. The lead pencil or pellet formed stool, popularly supposed to be due to rectal stricture, really indicates a spastic condition of the colon or a tight sphincter. Stricture of the bowel, unless situated in the anal canal, may be accompanied by a normal stool.

Frequency of Movements

Even among healthy individuals there is considerable variation in the frequency of bowel evacuations. Some people have several bowel movements each day, and others, apparently just as well and comfortable, have but one movement in two or three days. There is no sharp distinction between what may be considered physiological and that which is pathological. The less frequent the evacuation the larger amount eliminated at one sitting. Persons whose bowels move but once in several days will eliminate incredible amounts at a time, a half peck has been commonly recorded.

Constipation refers to infrequent movements which are not in proportion to the amount of food taken and in which the bolus is eliminated with difficulty. Constipation is associated with various chronic digestive disturbances, i. e., gastric dilatation, intestinal obstruction, and is also an independent disease due to one or more of several conditions.

Diarrhea

In diarrhea, due to disease of the lower bowel, the individual movements are not large, but very frequent, owing to the continuous reflex tenesmus.

Odor of the Feces

The obnoxious odor of human feces is largely due to indol and skatol products of albuminous decomposition, but made more disagreeable by methyl mercaptan, hydrogen sulphide and methane.

Reaction of the Feces

The feces are normally acid in reaction as a result of the acid fermentations of the lactic acid bacteria, which decomposes the carbohydrate foods, hence, the acidity is greatest on a diet rich in starchy and saccharine substances. A neutral reaction of the feces may occur on a diet rich in proteins due to the development of ammonia or the abundant secretion of mucus.

Color of Feces

The color of the feces varies considerably according to the nature of the food partaken. Contrary to the general opinion, the bile pigments have little influence on the normal color of the dejecta. Infants stools are normally light yellow because they contain unaltered bilirubin. In adult life the feces vary in color somewhat according to the nature of the food but on a normal mixed diet is of light brown or dark brown color. On a milk diet the stools are light color. On a diet rich in fat they are yellow or clay colored. On an exclusive flesh diet, owing to the presence of hematin and ferrous sulphide, the feces are blackish, due to the action of sulphuretted hydrogen, which is always present in the bowel, on the organic compounds of iron contained in

the food or in the secretions of the alimentary canal. The feces may be given a blood red color by raspberries, blueberries, blackberries and black cherries, or even an abundance of red wine. Food rich in chlorophyll (green vegetables) produce green or olive colored feces. Starches tend to produce a yellow color. Drugs may affect the color of the feces. Santonin, rhubarb and senna produce a yellow colored stool. Hematoxylin produces a red colored stool resembling blood. Calomel produces a greenish tinge, owing to its antiseptic action, which prevents the breaking of the bile pigment into urobilin and also by the sublimate derived from the calomel, which changes bilirubin into biliverdin. Blood in the stool unless fresh always gives it a dark appearance, the so-called "tarry stool" due to the formation of haematin. Bismuth, iron and manganese produce a dark brown or black colored stool due to the formation of sulphides of the metals; a tarry stool which can be differentiated from the bloody (hematin) stool only by a chemical analysis. Methylene blue given internally renders the feces blue when evacuated, but within a few minutes they change to bluish green.

Macroscopic Examination of the Feces

Many constituents may be observed macroscopically in the feces such as undigested particles of food, skins of berries, large pieces of connective tissue, woody vegetable fiber, indigested pieces of apples, pears, potatoes, grains of corn, flakes of casein, tomatoes. Various stony substances frequently appear in the stools. Gall stones, as enteroliths, may be found following an attack of biliary colic or even without this association. They are important as an aid to diagnosis and should be carefully sought for by mixing the feces with water and then carefully washing it through a sieve. They are friable, yellow or brown, smooth or faceted, small as a pea or even as large as an egg, composed of bilirubin, calcium and chloestrin and show concentric layers when fractured.

These examinations must carefully be continued during at least fourteen days after cessation of an attack of colic, or the stones may readily be overlooked, because they are frequently soft and clay colored. Real gall stones are not to be confused with pseudo-gall stones, woody bits of plants, apple and pear seeds. Concretions of fat or fatty soaps are frequently found after olive oil has been administered for cholelithiasis. Pancreatic stones are sometimes found in the feces although they are rare. They are small in size, never larger than a pea, colorless, irregular in shape, usually single and are composed of calcium carbonate and calcium phosphate. Fecal concretions (intestinal stones) are undigested food particles impregnated with calcium and magnesium phosphate, are very hard and may reach the size of a hen's egg. Small stones of this kind play a part in appendicitis, but are rarely found in the feces. Foreign bodies are sometimes swallowed and passed in stools, a fact to remember when dealing with children, insane or hysterical persons.

Various animal parasites protozoa, vermes and insects may be found in the feces.

Protozoa

These are unicellular, mobility is by pseudopodia or flagellae, reproduction is by simple division of the within cyst. They play an important role in the etiology of intestinal diseases.

1. *Entamoeba histolytica* causes amoebic dysentery.
2. *Entamoeba coli* causes no symptoms but may be found in cases of diarrhea.
3. *Entamoeba tetragena* are often associated with trichomonas intestinalis or other protozoa are found in cases of acute and chronic diarrhea.

4. *Trichomonas intestinalis* and the lamblis intestinalis are very mobile, darting about by means of flagellae, and are about three times the size of red blood corpuscles.

- (a) The trichomonas intestinalis is oval in form and has a cluster of flagellae at the front of its body, and a tail process.
- (b) Lamblis intestinalis is pear shaped with a suction cup at one end. It has three pairs of flagellae and two tail threads.

Vermes—Vermidia

When examining for worms and ova the feces should be carefully washed. A laxative or vermifuge may be necessary to bring out the worms, or head of the tape worm. The feces should be examined microscopically for ova making very thin spreads of feces on a slide and using a low power lens. Most ova are oval in shape, yellow in color, average about 50 x 30 m. in size, possess a shell and a central protoplasm which may be granular, segmenting or containing embryo.

1. Trematoda (Flukes).

Schistosomum hematobium. The ova large (50 x 70 m). It has a terminal and lateral spine on its shell.

2. Cestoda (Tapeworm).

(a) *Tenia solium* (pork tapeworm).

Worm—The worm itself may measure up to three meters. It is a flat worm with a scolex (head) proglottides (segments) and the scolex is smaller than the head of a pin, is pear shaped has four suckers and a circle of hooks. The proglottideo show terminal arborizations of the uterus. The cysticercus or larval form usually is found in the pig, but may develop in man. The diagnosis is made by the findings of segments or the ova in the feces. The tapeworm may cause no symptoms in some individuals while in others it may excite dyspeptic and nervous symptoms and severe anemia.

The ova are small (30 w. in diameter) round and has a thick radically striated shell.

(b) *Tenia saginata* (beef tapeworm).

The worm may attain the length of 4 to 7 meters. The scolex is of the size of the head of a pin and has four sucking discs but no hooklets, the proglottides show a branched uterus. It usually causes less severe symptoms than the *Tenia Solium*. The cysticercus develops in beef and cannot develop in man. The ova are smaller than that of the *Tenia Solium*.

(c) *Hymenolepis nana* (dwarf tape worm).

The worm is 1 cm. in length, the scolex is globular with four suckers and a crown of hooklets, the proglottides measure one-half millimeter at its widest part. It is diagnosed by finding its eggs in the feces. It may produce severe abdominal and reflex nervous symptoms. The ovum measures 30 to 40 w. in diameter, is round and has threads between the inner and outer wall of the shell.

3. Nematoda (round worms).

(a) *Ascaris lumbricoides* (stomach worm).

The worm is cylindrical, 20 to 40 centimeters long, reddish brown, male anal extremity curved like a hook with two spicules. The oral opening has three muscular lips with fine teeth. It may cause no symptoms or may cause digestive disturbances.

The ova are large (70 by 50 w.). It has a thick shell with a rough mulberry like albuminous envelope.

(b) *Oxyuris vermicularis* (pin worm, seat worm).

The worm is thread like, one centimeter long and white. The head is a small knob. The male tail end is rolled toward the ventral side. Diagnosis is made by finding the worms in the feces. They produce severe itching about the anus. The ovum measures 50 x 20 w.

is asymmetrical having a bulge on one side; colorless thin shell, the protoplasm is granular or in various stages of embryonic development. The ova are not found in the feces but rather in the folds around the anus.

(c) *Unicaria duodenale* (old world hook worm).

The worm measures 12 to 18 millimeters long, is white or blotched with brown when containing blood. The buccal capsule has four hook like teeth and a large mouth opening. It causes severe anemia. The ovum measures 50 x 30 w., is thin with a colorless shell. The protoplasm is unsegmented or may divide into 2, 4 or 8 rounded segments.

(d) *Necator americanus* (American hook worm).

This worm is smaller than the old world hook worm and the buccal capsule has semilunar lips, prominent dorsal median teeth and a smaller mouth opening. The ova are larger than the old world hook worm ova.

(e) *Trichocephalus trichiuris* (Whip worm).

This worm measures 40 to 5 centimeters in length. Its anterior portion is thread like resembling the thong of a whip. The posterior portion is thicker like the handle of a whip. It is seldom seen in the feces. It usually causes no symptoms. The ovum measures 5 x 25 w. It is deep yellow or brown in color and has a button like projection at each end of a thick shell.

Stools of An Infant

Within 24 hours after birth dark brown or black mucous stool should be voided. The stool on a milk diet is uniform; of butter like consistency and light yellow in color. Any variability from the typical milk stool occurring in connection with illness of the infant is of great diagnostic and prognostic import. A cheesy stool in a normal healthy baby means nothing, showing only an excess of undigested casein and is no indication for change of diet or the exhibition of drugs but should diarrhea accompany or follow the appearance of these white lumpy stools, the indication is then clear to reduce the proteins and give barley water.

The following table is taken from Williams:

| Appearance of infant's stool | Significance when certain symptoms justify |
|----------------------------------|---|
| 1. Pink streak | Uric acid infarct contamination with urine |
| 2. White and cheesy | Undigested casein |
| 3. Gray | Obstruction, jaundice, excess of fat. |
| 4. Green | Changed bile pigment |
| 5. Curds—Colic with Constipation | Proteins at fault |
| With Diarrhea | Fats or Sugar at fault |
| 6. Green—sour—diarrhea | Malnutrition—severe intestinal inflammation |
| 7. Mucus | Enterocolitis |
| 8. Red | Blood from lower bowel |
| 9. Brown | Blood from upper bowl |

Technic of Examining the Feces

Washing the Feces:—Place a small amount of feces in a beaker, add water, stir, let settle and pour off the water. Repeat this washing several times. Examine for macroscopical substances.

Microscopical Examination:—1. Place a small loopful of the feces on a slide, press down, cover glass and examine with low power and then with a high power lens. Look for muscle fibers, vegetable cells, bacteria, crystals and fat. In examining for protozoa the feces must be fresh, the spread on the slide is very thin, and the slide is kept on a warm stage in order to better observe the movements of the parasites. An entamba

should not be diagnosed unless its mobility can be demonstrated. At rest it resembles a large epithelial cell.

2. Add a drop of Tr. iodine to a loop of feces. Starch granules with stain blue if present.

3. Add a drop of Sudan iii to a loopful of feces. Fat droplets stain red if present.

Chemical Examination

Test for occult blood. Dissolve 1 gm. of benzidin in about ½ dram of glacial acetic acid. Put 1 c.c. of feces and 5 gms. of dilute acetic acid in a test tube and mix. If blood is present a blue or green coloration results.

If the feces give a positive reaction, or if occult gastric or intestinal blood is suspected, the patient should be put on a meat free diet for three days. If the reaction is then positive, one can definitely say that the blood is pathological.

Mucus (mucin) which normally coats the formed feces, may be so greatly increased as to be a large part of the stool. Any visible amount of mucus in the feces is abnormal. In diseased conditions it may be found as:

(a) Shreds, lumps or small flakes, somewhat homogeneous, and transparent, rich in cells and detritus of digestion, varying in amount from small portions to nearly pure mucus.

(b) Large amounts of mucus mixed with blood. In mucous colitis evacuations may consist almost wholly of the mucus, which is whitish, ribbon like or tube like and expelled with violent colicky pains. These long strands may be mistaken for tape worms.

(c) Strips of tough, leathery mucus from the large bowel as in conditions of secretory neurosis.

Blood:—The stool may be red and tarry, may contain microscopic blood or occult blood, the color of the feces depending upon the amount and source of the blood.

Occult blood may at times occur in the feces or it may be recognized macroscopically. In these latter instances the origin of the blood attracts our attention. Solid feces streaked or coated with fresh blood indicates a hemorrhage from the pelvic bowel (hemorrhoids, fissure or ulcer) while solid feces tinged throughout with blood would suggest hemorrhage high in the intestine or the stomach. In liquid stools the higher the hemorrhage the more altered is the blood when voided because of decomposition and digestion. Hemorrhage from the stomach is black or tar like when appearing in the stool. Typhoid hemorrhage may be distinctly red, as it is so promptly voided by a stool. Bloody serous liquid stool without real feces present suggests intussusception or malignant disease of the alimentary tract.

Pus:—Pus in the feces is generally pathognomonic of ulceration. If any considerable amount of pus is seen it is due to a ruptured extra-intestinal abscess, ulcerated carcinoma of the colon or rectum or dysentery. Small amounts of pus may be due to an ulcer or to catarrhal changes. Undigested lumps of casein may be mistaken for pus in a diarrheal stool.

Fat:—An excess of fat in the feces may occur in

1. Increased peristalsis.

2. Interference with the fat absorption in the small intestine due to

(a) amyloid degeneration of the intestine.

(b) tuberculosis of the intestine.

(c) tabes mesenterica.

(d) chronic tuberculous peritonitis.

(e) cancer of the intestine.

3. Biliary obstruction.

4. Pancreatic disease.

A clay like stool usually contains fat droplets and large masses of fatty acid crystals.

Microscopical Examination

If the material for examination is tenacious, such as the bloody mucosa in cases of mucous colitis or amoebic dysentery or the muco-pus of tuberculosis, it can be transferred to a glass slide with a tracing needle; if watery, it can be drawn up into a small glass pipette and a drop or two placed on a glass slide and a cover glass placed over it.

Spreads which are to be stained are prepared and fixed similarly to a sputa examination.

Crystals:—Various crystals may be found among the fecal matter although but a few have any significance:—

1. Fatty acids and soaps appear as slender needle like crystals.
2. Triple phosphate crystals are common.
3. Calcium oxalate crystals—characteristic octahedral forms.
4. Charcot—Leyden crystals. These strongly suggest the presence of intestinal parasites.
5. Hematoidin crystals: yellowish or brown needle like or rhombic shapes.
6. Bismuth suboxide crystals appear after the administration of bismuth salts.

Bacteria:—There are many varieties of micro-organisms found in the feces, some of which are normal inhabitants while others are abnormal.

Physiological Flora

1. Yeast are often present in a normal stool. Moulds are rare.
2. *Bacillus coli communis*.
3. *Bacillus lacti aerogenus*.
4. *Bacillus bifidus* (found in suckling infants). These are of the bacillus alkaligenes and proteus group.

Pathological Flora

1. Blastomycetes found in the stools of patients suffering with systemic infection.
2. Sarcinae—often found in cases of dilated stomach and diarrheas.
3. *Bacillus pyocyaneus*.
4. *Bacillus aerogenus capsulatus*.
5. *Bacillus tetani*.
6. Staphylococci.
7. Streptococci.
8. *Bacillus tuberculosis*.
9. *Bacillus typhosus*.
10. *Spirillum chlorae asiaticae* (coma bacillus).
11. *Bacillus Shiga*. These organisms are the cause of bacillary or infectious dysentery.
 1. Shiga type; ferments glucose only.
 2. Flexner-Harris Type; ferments glucose, mannite and dextrin, but not glucose. (This is the type which prevails in the United States.)
 3. *Bacillus "Y"* (Hiss & Russell; ferments only glucose and mannite).

In examining for bacteria shreds of mucosa are teased out and spread on the slide after which they are treated the same as when examining sputa.

Tumor Fragments:—Small adenoma or pieces of tumors may be torn off from cancers or ulcers in the rectum, sigmoid or colon and be found in the feces. They are hard to recognize but may be large enough to wash and diagnose with a freezing microtome.

New Section Officers

At the annual election of the Section on Dermatology and Syphilology of the New York Academy of Medicine, the following officers were chosen: Mihran B. Parounagian, M. D., 126 East 39th Street, New York City, Chairman, and George C. Andrews, M. D., 121 East 60th Street, New York City, Secretary.

Eumorphics

(Continued from page 175)

off foot. Another way: sit on a chair, keep the knees parallel also the feet parallel. Extend one foot as far as possible; then grasp with the extended toes, turn them inward; then pull back toward one's self in a curving motion till the feet are again side by side. Then extend the other foot. The knees must *remain parallel*. Repeat five or six times. These movements can be amplified in various ways but observe the conditions above specified.

Two other groups will be mentioned—of the many which deserve to be—since they are of special value.

"All four" movements on the floor like those of quadrupedal animal walking but not progressing, stretching the hips and pelvic bones to the uttermost.

These are excellent to restore the primitive four footed forms of adaptation and replacement of the internal structures to the situations of their original design, i. e., the vegetative, respiratory, abdominal and pelvic; the blood vessels and other spherical and tubular organs and channels.

Directions:

Kneel on hands and knees, resting the hands on the extended fingers, in order to balance the level. Place one foot, e. g., the right, parallel with and *outside* of the right hand, extend the left leg as far back as possible, resting on the over-extended toes. Thus each thigh is "end for end" to the other. Then sway up and down two or three times, keeping the knees rigid, so as to stretch the hip joints so as to give them freedom in locomotion.

Then reverse the legs; the left to the outside of the left hand, sway up and down. As the junction tissues become flexible the positions can be alternated with a jump. Then jump back and forth (6 or 8 times) swaying up and down at each shift.

The same effects can be secured by the "desk exercise." Stand in front of an object, such as a desk—not higher. Place the right foot on the edge of the desk, left leg straight down, and about twenty or twenty-five inches from the desk, hang the right arm down *inside* the knee, sway forward and down three times, and each time a little farther, till at the third bear hard down so as to stretch the hip joints till the thighs stand end for end, in a straight but reverse line.

Then shift; the left foot on the desk, the left arm *inside* the knee and repeat three times with increasing force as before. Repeat four or five times.

This exercise is peculiarly valuable in conditions of prostatic enlargement, or other static disorders of the prostatic plexus or deep pelvic structures.

Finally: Practice walking on a narrow longitudinal surface with the view of restoring power of balance. Use some such device as a section of railroad track, or the curbstone of a parkway turf.

Directions for Treatment by Solar Energy, Sun Rays, Sky-Shine and Changing Airs and Breezes on the Bare Body

Graduated exposures of the naked surface to such natural forces as sunlight and varying airs, still or in motion, supply the most promising and comprehensive remedy, or healing force, for enhancing vital power, resistance, for amplifying the defensive protective and reparative forces. They are suitable for any, almost all, especially those ailing from lingering or obstinate states of depression or disease effects. Individuals differ in their susceptibilities; also certain germs or infective agents themselves react in unlike manner, also in rate and degree.

The sun rays and rude breezes are capable of diverse degrees of harm to some unless carefully graduated. Hence specified regulations must be observed, at least until the individual becomes inured to them, and suitable adaptations are learned and supplied.

Hence many precautions should be observed. One must judge in accord with the temperature of the day, the conditions of weather, the directions and force of the wind, and provide against opportunities for harm. The time most suitable is, especially on a hot day, the earlier and later hour, from 9 to 11 A. M. and from 3 to 5 P. M. Avoid the middle hours, especially in warmer weather. The earlier hours are relatively cooler and of the late afternoon hotter—as the air becomes warmed.

When the direction and force of the wind is such as to strike roughly, extra care should be used by side screens of about 4 to 6 feet high. Otherwise use no screen and welcome the impact of air. Soon the surface nerves become inured and are better enabled to produce desired effects.

Individuals—as said—differ widely in their susceptibility to both the sun and the wind. Those of races, whose origins were in the tropical or sub-tropical regions, can endure more of the sun but less of cold. This obtains also for those whose origins were in the temperate zones, but are of brunette type; of darker coloring, having more skin pigment. Hence they can progress more rapidly when exposed to the sun but should use more care in protection from cool breezes, especially the sudden shifting of cold winds.

Those from northern countries on the contrary—especially of blond type—are more sensitive to solar energy but less to coldness. Some skins are peculiarly sensitive, those who freckle; also it is found they profit less from sun treatment. The precautions for them must be doubled. The longer the period of exposure—as a whole—is lengthened, the more radical and permanent are the benefits.

The general suggestions given below are worked out from large experience, and by many experts. They are adjudged for the ordinary individual:

Directions: To get the best effects of sun rays they must be direct. Any interfering glass diverts or cuts off the ultra-violet rays. If the treatment is taken in one's own home, select a room with a southern exposure. Pull down the top half of the window and lie where the sun rays travel. Shift the couch on which one lies, or the mattress or rug, to keep in the sun as its rays move.

When so situated as to take the treatment out of doors the first care is to escape the dread of being seen. A little ingenuity will fix that, however. There is always available the roof of the house, or a flooring can be made over a porch, and the protection of canvas screens.

Let the candidate for solar radiance lie facing the north so as to have the sun less directly in the eyes. Cover the head with some fabric. Nothing better than a small towel rolled turban-like around the head. Better use dark glasses while in the sun, or a dark veil, or piece of black fabric. In some persons who are exceedingly weak, or for any reason are suspected of being oversusceptible, the exposures at first should be for only five or ten minutes. Also continue the short exposures for a longer number of days, and until it is deemed safe to increase the time.

Begin with short and partial exposures twice a day, say at 9 or ten and at 3 or 4 in hot or warm weather. When cold, from 10 to 11 and 2 to 5 P. M. Lie on the back first, then turn on the face. Expose the feet and legs for fifteen minutes, first on the front and then on the back for the same length of time; arms and hands exposed to the elbow. Do this for three or four days.

Then expose legs to mid-thigh, and arms to shoulders, three or four days. Then legs to upper-thighs and arms to shoulders, back and front. Thus gradually remove the upper garments till only the private parts are screened with a "breech clout." After that be guided by the degree of sensitiveness. Increase length of the exposure to two or three hours.

In lengthening the exposures bear in mind that, when the time of the newer areas are being increased, the time for the newer parts only is considered. This time is added to the exposures already made, the feet so much, then the mid-leg or mid-arm so much more, then the heretofore unexposed parts, and so on up.

Thus: expose the feet ten or fifteen minutes each day for three or four days; then to the knees so much, ten or fifteen minutes; making a total for the feet 20 to 30 minutes; then to the mid-thigh and mid-upper arm, ten or fifteen minutes—total for feet 60 or 70 minutes; then the shoulders ten or fifteen minutes—total 70 to 80 minutes; then the trunk, abdomen, ten to fifteen minutes—total for feet or hands 80 to 90 minutes; then to the back ten or fifteen minutes—total 90 to 100 minutes.

After that for two or three or even four hours they can remain in the sun. During each of the exposures, thus prescribed, it is well for the patient to lie half the time exposed in front and the other half with the abdomen down.

1504 Pine St.

Peptic Ulcer

(Continued from page 177)

interference was indicated for any reason. If we must look upon ulcer as a potential cancer, gastrectomy should always be followed by the radical operative measures as a constant indication in cancer cases. But we are still very far from being convinced of its necessity, and I am ready to emphasize my strong adherence on the ground of my own experiences to the view of those who consider the cancerous development of a simple ulcer as a *very rare occurrence*; and I can with good conscience abstain from radical operative measures, except in a very few and special cases.

This position may be taken the more readily because, according to Balfour, when cancer has been found to develop on the site of a previous ulcer, that ulcer was nearly always an expensive one occurring in the posterior wall, the removal of which presented a formidable surgical risk with an operative death-rate, to take no account of the inoperable cases, of 25 per cent, as emphasized recently by Bastedo. Therefore easily removable ulcers are not suspicious of cancer, and those which do afford ground for suspicion of cancer are ab origine a great risk to the surgeon and have a high mortality. In other words, what the surgeon can easily excise is not necessary to remove because it is no cancer, not even a potential or presumptive cancer; while the cancerous ulcer and that suspicious of cancer, which are ab origine in all probability cancer and not ulcer developed secondarily to cancer, require radical operation with a correspondingly higher death-rate.

The chief draw-back and a natural contraindication to any gastric operation is the high death-rate, which may be intrinsically high or may be relatively low, but it is always higher than an average of 5-10 per cent, as gathered from the statistics of the masters of surgery. This is a known fact, still too little accentuated. Operation does not prevent development of new ulcers, which may be met with as often as in 33 per cent of instances—new ulcers, which may be recurrences of old ones or newly developed gastric and gastroduodenal ulcers. The

dangers connected with every ulcer have not been obviated, for extension or progress of the ulcer, perforation, bleeding, cancerous involvement, firm adhesions to neighboring structures, etc., may take place after any operation. Subtotal gastrectomy has a higher mortality, requires more surgical skill, but, on the other hand, it affords more satisfactory results, though even this operation cannot promise a permanent cure, because the disposition, the constitutional factor persists, with the possibility of new ulcer formations and with their consequences. *Therefore, each case has to be considered separately from the viewpoint of surgical interference, that is of the method of choice*, because gastroenteroanastomosis for example, which is a less heroic interference as a rule, may be the source of a fatal development, if performed in a person of asthenic habit, one with ptotic or atonic stomach, as observed by Haberer and Kuttner. *Therefore in some cases the more heroic interference may be more conservative than a form of operation usually more harmless.*

It is a principle to be kept in mind that peptic ulcer is a constitutional disease, which cannot be extirpated radically enough by means of the surgeon's knife, because the same constitutional inferiority which led to the first one, will produce fresh ulcers after the operation. This operation may be compared with gastropexy, which may improve the gastropexy, but not the general disease which brought it on.

Ulcers of the stomach and duodenum are, after all, internal diseases, which have to be treated by internal means. There are strict indications, in presence of which surgery must be resorted to. If proper indications are defined for each form of treatment, surgery and medicine do not and should not interfere with each other. They never compete, they complete each other.

30 East Ninety-second Street.

Medical Testimony

(Concluded from page 168)

monument to silence. I agree with Mr. Downs' strictures against physicians who use on the witness stand sesqui pedalian utterances. I recall a distinguished physician who was asked if a patient's scalp had been wounded and replied: "No, the integumentary structures of the epicranium were still retentive of their anatomical integrity." Whereupon the examining attorney inquired: "Doctor, do you mean his conk was not cracked?"

Dr. Harry G. Goldman:

Though I am a member of both professions I shall speak at this time from the standpoint of the physician:

I agree with Dr. Nammack that the three physicians were perfectly justified in refusing to give any information over the telephone to Mr. Downs regarding a patient of theirs.

Concerning the statement of Mr. Downs that the insertion of gauze into the abdomen, through apparently a fistulous wound, would cause immediate death, I should say that the speaker was misinformed. I spent fifteen years in the operating room, have seen gauze used constantly in laparotomies, and I have never known its use to be the cause of death. I am sure it is the experience of others in the profession. Besides, it would be impossible to introduce sufficient gauze through a small wound which required cutting to cause any amount of disturbance to a patient.

As for formaldehyde introduced after death, as being the cause of acute gastroenteritis, I should say here again, the speaker was misinformed. No inflammatory changes can take place in the body after death. Inflammation implies a living process. The phenomena accompanying inflammation are congestion, exudation and transudation. These processes imply an active circulation which can only take place in the living organism. Formaldehyde introduced after death, may be recovered, but it cannot produce inflammatory changes in the mucosa and musculature of the gastro intestinal tract.

I shall now speak from the standpoint of the lawyer:

It was my intention, originally, to discuss the matter of the hypothetical question.

I was astonished at Mr. Downs putting the entire responsibility upon the shoulders of the physician. It is an established

principle in law that where the facts are agreed upon and the issue is only a matter of law, both parties incorporate the facts or the evidence and submit them to the court to decide the question of law. If, however there is a dispute, which means there is an issue of fact, each side has a right to formulate the hypothetical question.

It is generally known and conceded that it is a proper procedure for each side to so frame the question as to best suit his own ends. The physician has nothing to do with the formation of the hypothetical question—he may assist, but that is all.

Mr. William Travers Jerome, speaking before the University Medical School Alumni Association, referred to this matter and stressed the point that the onus should be placed entirely upon the legal profession. The expert medical witness cannot but answer the question as framed by the attorney of his side in a favorable way, and he may honestly do so.

There is no question that there are crooked physicians practicing in this city, but I know, from my experience, that they do not constitute one-half of one percent of all those in the medical profession. I hold no brief for this type of practitioner, but the blame should be placed where it should naturally fall, and that is, upon the legal profession. I know, at least, one-half dozen law firms whose specialty are negligence cases. These lawyers, through their henchmen, make it a practice to coach the patient for weeks before the trial—how to walk, how to talk and how to act.

Concerning the testimony of the physician who brought in neurasthenia and other ailments not mentioned in the bill of particulars referred to by the speaker, it seems to me that Mr. Downs could have excluded such evidence by merely objecting to it. The purpose of a bill of particulars, is to limit the proof at the trial to such matter as appears in the bill.

Dr. L. W. Zwisohn:

It is surprising that medical expert testimony is pointed out as being unreliable and the profession is being accused to foster false testimony in our courts of justice. Do not engineers or chemists differ when they are called as experts? Do not experts on fire arms differ when called to testify?

When a medical man is called as an expert he may honestly differ from the doctor who is testifying on the other side of the case.

The evil is not with the medical man on the stand but with the attorney who is trying to belittle the medical man in the eyes of the judge and the jury.

Then when the hypothetical question is put before a medical expert and he is asked to give his opinion, no one has the right to question his honesty any more than to question the honesty of a lawyer when he takes a case and gives his opinion that his client will win, and it turns out that he lost the case.

There are evils in expert testimony, but the remedy lies in the legal procedure, not with the experts.

Lawyers should not try to win cases by bullying the medical man who is testifying for the other side, but should treat the physician as a gentleman as he is treated in the European courts.

Mr. John E. Carlan:

Even doctors make mistakes; that is inevitable with human beings, no matter what profession. I think there is no question but when the physician is put on the stand the lawyer for the opposing side upsets his equilibrium and makes him anything but cool and collected. I should think it better to have the good will of the doctor, if you are trying to make him prove something of benefit to your case, than his ill will, but it is a principle of lawyers to try to get the witness upset in order to bring out some hidden thing that he is trying to conceal. I question very much whether the legal profession stands on a very much higher level than even the lowest of the medical profession. On the other hand, Mr. Downs has come to us with a message of profound importance; he has given concrete examples and a certain number of facts, and these can be used to advantage.

Mr. Downs (closing):

I think that two of the speakers must have misinterpreted in some manner the intention back of what I spoke of tonight. I did not come here to defend the legal profession, nor did I come to accuse the medical profession. I was invited to speak on the trial lawyer's viewpoint of medical testimony and I did this by illustration, using some of the instances that have occurred in my experience. You can read the written record of every case I referred to. They are not the product of my imagination but actual cases that have occurred in the court-room. I have not charged all doctors or the medical profession at large with unprofessional actions, but I have tried to give you concrete instances to use as you see fit. I did not intend to criticize you doctors nor to praise the members of my own profession, but merely to give you some striking examples of nonsensical testimony of some doctors, hoping you would profit by the faults of others, not by their conduct, or "their unpreparedness" I would rather say.

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Doctor Pedersen Joins Staff

The Contributing Editorial Board of THE MEDICAL TIMES is enriched by the appointment of Doctor Victor Cox Pedersen of New York to membership.

Doctor Pedersen has been contributing a series of urological articles to our columns for some time, and these papers have aided materially to the value of our reading matter.

Doctor Pedersen, who is a Fellow of the American College of Surgeons and of the New York Academy of Medicine is one of the best known genito-urinary specialists in the country. He is the author of text books and his general bibliography is exceedingly comprehensive.

Dr. Pedersen was one of the first, if not the first urologist to appreciate the importance of electrotherapy as applied to urological conditions, and his work on "Urology in Men, Women and Children" is among the early textbooks which discusses their relation intimately. For four years he was President of the New York Electrotherapeutic Society and is now President of the American Electrotherapeutic Association.

We congratulate our readers upon the opportunity presented to them to read the clear concise, and eminently practical articles that are presented by Doctor Pedersen.

Monument to a Country Doctor

Eighty-four years ago Dr. Crawford W. Long operated on a patient under ether. This general practitioner has a monument erected by his State of Georgia in one of the two niches accorded to that State in Statuary

Hall under the dome of the Capitol Building in Washington, D. C.

Georgia, honoring this old knight of the saddle bags, glorifies herself. Many of the States have not had imagination enough to erect anything but the statues of politicians.

Long was practising surgery with the aid of ether long before the other three heroes of anesthesia made their announcements, but failing to leap into the limelight promptly the degree of fame and credit that would have been his has been curtailed.

The monument is at least a definite recognition of his claims to the country's honor.

A Pathologic Paradox

Much is said nowadays, both by cultists and physicians, as to the salutary physical effects of a happy frame of mind. Happiness is believed to insure good health, in so far as a state of mind can influence the body.

Very well, but take the kind of happiness that our medical Titans derive from their work. They are intensely interested in their work, they adjust well socially to many institutions which require their talents and they enjoy their labors therein, they take a vast and enthusiastic delight in going beyond their obligations, and they are successful in an economic sense and happy about that. But these very men succumb with notable frequency to all sorts of vascular, cardiac and renal contempts.

It would thus seem that happiness in one's work increases the drive and thereby wears out the machinery earlier.

This age is said to be characterized by a sense of futility, but there is nothing in the foregoing remarks to justify this sense, since the true philosopher will reason that so long as life is quickened inversely as it is shortened one really lives a very adequate life. What matters longevity, if life is not successful? Merely to prolong life as such, after the manner advocated by commercial medical corporations specializing in longevity, means less than nothing.

Live a hundred years in fifty if you dare, and if you can.

New York's Vital Statistics

Deaths from alcoholism in 1925 in New York State showed an increase of 110 over 1924. Three-fourths of the total number of 735 deaths occurred in New York City.

The total volume of illness in the State during 1925 was relatively small. Indeed, health conditions during the past year have probably never been better.

The birth rate for the State has never been lower. It was 20.6 per 1,000 population. But the infant mortality rate was only 68 per 1,000 live births, which was lower than ever before. This suggests the experience of Holland, where the population has actually increased owing to the institution by the Government of birth control propaganda. The fewer children born receive such good care that the infant mortality tends to drop toward zero. The marked decline in our own infant mortality during the past fifteen years must be related to the lowering birth rate.

Although the population of New York State is larger by about 3,000,000 than it was twenty years ago, the mortality was only 200 more in 1925 than it was in 1905. The total number of deaths was 142,426.

Vitamin Excess

It has been a source of surprise to us that some imaginative and ingenious physiologist or clinician has not advanced a theory of vitamin super-sufficiency. We have been "fed up" upon the deficiency diseases; are there no super-sufficiency states caused by vitamin excess? This seems a plausible lead for research. Certainly the people have been persuaded to eat as much vitamin-laden food as possible. Why not study the effects upon albino rats of a diet surfeited with vitamins? What, conceivably, are the conditions which might be due to this type of satiety? We have some ideas on the subject ourselves. Perhaps the theory that cancer is in part the result of vitamin deficiency ought to be reversed. We are profoundly ignorant as yet, after all, concerning this matter. Who knows?

New Light On Contraception

We have shared the general opinion that the widespread practice of contraception tends to lessen population, but according to John R. Baker, of the Department of Zoology and Comparative Anatomy, University Museum, Oxford, this is not the case at all. He says: "In Holland, where contraception is practised more extensively than elsewhere, its effect has certainly been to reduce the birth rate; but the death rate has been so much decreased on account of the better care taken of children in small families, that the population has actually increased. . . . If, thanks to contraceptive methods, Great Britain were over-populated not by weaklings but by men and women who from the earliest moments of their lives—from the time when they were as yet unborn—had had the best possible conditions of existence, this over-population would be less demoralizing, for there would be more people whose sound constitutions and healthy minds fitted them for an agricultural life in our Dominions."

The argument that the practice of contraception tends to increase population is seemingly sound, so it may turn out that the birth control movement will yet be captured and embraced by those who now most fear it.

For if Baker is right, conventional standards of patriotism, social expediency and morals would seem to demand the practice of contraception, since such standards endorse as desirable any means of increasing population.

On the other hand, those of us who have wished to see smaller populations may have to modify our advocacy of contraception as a means to that end.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

The Viewpoint of a Plain Citizen

To the editor of *The Sun*—Sir: About a week ago I read in your valued paper of the destruction by a United States Marshal of \$1,000,000 worth of wines, champagne, etc., of which at least 85 per cent was of the finest grade. This confronts us with a peculiar situation and prompts a query.

The situation is: The Government permits the manufacture of liquor for medicinal purposes, and a person who is unfortunate enough to be taken sick can procure the necessary wine or champagne or whisky by a doctor's prescription, for which he pays a good fee and then presents to a drug clerk and gets the "medicine" at the apothecary's price.

This should discourage any poor man from courting illness; the rich one is, as usual, only slightly discommoded.

To illustrate: My mother's health began to fail about six months ago and she lost her appetite until the sight of food was repellent. The doctors warned us she had but a short time to live unless she could eat and retain some food. One of them suggested trying champagne. So my brother procured a good vintage and the reaction from a few spoonfuls was almost immediate, until now she is quite well, for a woman of her years, and able to go out.

The query is: Why not add the confiscated supply of good liquor to the legally manufactured quantity and sell it for a reasonable price to the unfortunate sick who need it? Lord knows the respectable white collar clerk has a hard enough time to pay the doctor, the nurse and the druggist for the sick in his family.

Isn't it rather idiotic and a form of sabotage for the Government wantonly to destroy a beneficial article on the one hand while on the other it approves the manufacture of the selfsame thing? It would seem that the Government is in conspiracy with the bootlegger and the rich at the expense of the poor, the sick and the needy.

JAMES HAMMOND.

Brooklyn, May 18.

Diagnosis and Treatment

The Malaria Treatment of General Paresis—A Remarkable Achievement

Among the protean manifestations of syphilis the lesions of the nervous system are in general the most refractory to treatment. It is not so many years ago that neurologists were very skeptical as to the value of specific medication in tabes, for instance, although they somewhat modified their views after the discovery of the spirocheta pallida and the introduction of the arsphenamins. Even at the present time, however, when the syphilitic origin of certain nervous diseases is no longer a theory but a fact, and when the Wassermann and other tests permit of a much earlier recognition of these cases, it cannot be claimed that there has been any striking advance along the lines of chemotherapy. After the spirocheta has invaded the brain and spinal cord it seems to be extremely difficult to eradicate, perhaps because of a more favorable environment. The instinct of self-preservation is inherent in every living thing, however low in the scale of existence, and there is nothing fantastic in the idea that when subjected to destructive agents the surviving organisms may find refuge in tissues less abundantly supplied with channels through which spirocheticidal substances gain access, as in the central nervous system. Moreover, conformably to the law of self-preservation, certain colonies of treponemata may acquire an immunity toward arsenic or mercury or both, and this property may be transmitted, at least for a time, to their progeny. It has also been suggested that there may be a strain of the spirocheta syphilis which has a predilection for nerve tissues, and this view is supported by numerous observations, which show that persons who present well-marked lesions of the skin and mucous membranes are apparently less liable to suffer from luetic affections of the nervous system, such as tabes or general paresis. With reference to this point Dr. Hugh A. Baldwin (*Urol and Cutan. Rev.*) has recently expressed himself as follows: "I have yet to learn, in my own practice or in that of my colleagues whom I have consulted, of a case of neuro-syphilis developing in a patient who had ever given any manifestations of severe syphilis or other viscera." This accords with the writer's own experience. From what has been said it is evident that when the treponema attacks the nervous system it is difficult to prevent and arrest its ravages, and this difficulty is enhanced because the early manifestations of its activity are often so obscure that the nature of the condition is not recognized until marked pathological changes have developed. The most that can be expected under these circumstances is to check their further progress. Undoubtedly, distinct improvement has resulted under the use of the arsphenamins, especially tryparsamid, but even more striking and encouraging is the amelioration that has been obtained in the well-nigh hopeless cases of general paresis of the insane with inoculation of malaria. To Professor Wagner-Jauregg justly belongs the

credit of having developed this method by careful and patient investigations over a period of many years and of having introduced it into neurological practice. It has been recently stated that as far back as 1876 Dr. Rosenblum, a Russian, reported a small number of observations on paretics who had been greatly benefited by infecting them with malaria, typhoid or recurrent fever, but evidently this report attracted no general attention. In a very interesting article in the *Wien. med. Wochens.*, No. 2, 1926, Wagner-Jauregg tells us that in 1887 he collected a number of isolated cases scattered in the literature, in which various mental and other diseases had been cured by an attack of some intercurrent febrile infection, and on the basis of these observations and of his own he published an article at that time suggesting the artificial inoculation of malaria or erysipelas in incurable psychoses. Later he confined his efforts chiefly to progressive general paralysis, which he treated with injections of tuberculin, and in 1909 reported some successful results before the International Medical Congress in Budapest. His communication, however, attracted but little notice. Moreover, the remissions observed after the tuberculin injections were incomplete and often not permanent. Therefore, he returned to his first suggestion made thirty years previously, and in 1917 inoculated nine paretics with malaria of the tertian type. At the end of two years three of the patients were still sufficiently restored, both physically and mentally, to follow their occupations, and not until permanent results had been achieved in some instances, was the method tried on an extensive scale. Up to the time of his last report more than a thousand cases of general paralysis had been inoculated with tertian malaria in Wagner-Jauregg's clinic, and many thousands of these unfortunates in other parts of the world have become useful members of society. In 25 to 40 per cent of patients the remissions have been durable, and this was especially the case if they lasted two years. The new method of treatment is easily carried out. A few cubic centimeters of blood are withdrawn from the vein of a malaria infected parietic and injected subcutaneously or intravenously into another subject. After eight or more febrile attacks the patient is treated with quinin in the customary manner, and later is usually given a course of nearsphenamin injections. The problem of securing a constant supply of plasmodia is easily solved in institutions where the organisms can be transmitted indefinitely from one patient to another, and under certain precautions the infected blood can be preserved for as long as three days and therefore transported to distant places where malarial subjects are not available. Discrimination in the selection of cases is also necessary because in old and debilitated paretics the development of high fever, especially if it assumes the quotidian type, may be fraught with serious and even fatal consequences, but, as Wagner-Jauregg shows, this may be obviated to a large extent by modification of the treatment. Moreover, the risk seems fully justified in such a hopeless and wretched class of sufferers. We have deemed it of interest to present this brief sketch of the evolution of a method which, according to Dr. W. H. Goekerman of the Mayo Clinic (Minn. Med.), is one of the outstanding achievements of modern therapy. There is good reason to believe from the encouraging results observed in tabes that its scope of usefulness will be extended to other forms of neurosyphilis. Whatever be the outcome, however, one cannot fail to be impressed with the painstaking and persevering efforts of Wagner-Jauregg during more than a third of a century, to regenerate both in mind and body large numbers of the inmates of institutions for the insane. It is to such patient laborers in the vineyard of medical science that our profession owes its altruistic ideals in the service of humanity. —(*Int. Jour. Med. & Surg.*, April, 1926.)

Importance of Early Treatment of Cancer in Women

While progress is being made in cancer research and discoveries in this field may lead to practical results, it seems certain that for some time to come, and probably for a long period, success in treatment must depend, as heretofore, upon early diagnosis and prompt and adequate operative measures, aided to a certain extent by radium and x-rays. If a germ origin of cancer be discovered, or a germ or virus be isolated as a contributory cause, such a discovery will favor the initiation and development of preventive rather than curative measures. If a casual extrinsic germ were discovered, means might perhaps be found to prevent it from entering the body, but as for curative measures after cancer has developed and gained a foothold, the methods which have been advocated for years and which have been employed to a limited extent are the only ones worthy of consideration up to the present time. If it were possible to diagnose the pre-cancerous stage with any degree of certainty a long step forward would have been taken. Dr. J. Shaw Mackenzie has made researches along these lines which promise to produce satisfactory results.

In connection with the treatment of cancer in women, Sir George Newman, chief medical officer of the English Ministry of Health in a recent report on cancer of the breast, emphasizes the importance of the early intervention by the existing methods. The report shows that only 15 per cent of the patients in hospital

had sought treatment at a stage at which real hope of prolonged relief or a possible cure by surgery could be considered likely. "It has long been known," the report points out, "that unmarried women suffer from cancer of the breast at a higher rate than married ones." It has been proved that among married women those who are less fertile are at a disadvantage. The common belief that lactation at repeated pregnancies is a cause is shown to be baseless. Finally, this inquiry has confirmed and placed on a basis of statistical measurement the connection between the occurrence of cancer of the breast and a previous injury. Commenting upon the low percentage of patients who presented themselves for treatment at a sufficiently early stage, the report goes on to say: "It is well to emphasize this point, and once more to insist that there are many right and useful things that ought to be done now, without waiting for the solution of cancer problems, to which we may look forward in the near future. It is all to the good that the resources of laboratories and research are being concentrated more and more hopefully on the ultimate causation of cancer and its pathology, and that 'field' inquiries, such as those set out in this report, are being pursued and their results compared with those of other countries, in search of clearer knowledge of the epidemiology of cancer. But researches should not be allowed to blind us to the fact, that in this and other countries a mass of disease and suffering is still needlessly continuing which we already have ample means at our disposal to prevent."

Therefore at the present time the slogan should be—educate the public to consult medical men when any symptoms of disease appear and obvious symptoms of cancer in women in particular. Further, to instruct the laity persistently and continually that surgical measures, aided on occasion by radium and x-ray treatment, are the only ones which are likely to cure or relieve malignant growths, and that these methods can be effective only when the disease is in an early stage.—(*Int. Jour. Med. & Surg.*, April, 1926.)

Carcinoma with Hematuria

Walter G. Schulte of the Urological Service, Holy Cross Hospital, Salt Lake City, says that frank uremia, with high blood urea and creatinin, is rare following pyelography. He reports the following case, with a comment on the rapid change in the blood urea after large doses of normal saline subcutaneously.

Patient, a well-nourished male, age 36, weight 176, came to the hospital November 30, 1925, complaining of abdominal soreness, aggravated by pressure, of two weeks' duration, and a peculiar "firmness" across the epigastrium. Accompanying the soreness has been flatulence, which was relieved by taking frequent cathartics. Abdominal distress keeps him awake at night, and is aggravated by eating. Previous to present attack, considered himself well. Is constipated now, but this is unusual. Has lost ten pounds in weight.

On November 29, noticed his urine was bloody. This has persisted. He has had a painless enlargement on left side of scrotum for ten years, dating from an injury. When examined by army doctor in 1917, condition was said to be hydrocele. Operation was advised. At present time feels strong, and is up and aboutward. Worked till the day before admission. No other significant data obtained from family or previous history.

Abdomen contains a large irregular mass extending on right side down to iliac crest, and on left side to level of naval. It is nodular and moves freely with respiration. No localized area of tenderness. Dullness continuous with that of the liver. Rest of abdomen seems rather hyperresonant. No shifting dullness in flanks. Large fluctuating mass in left scrotum. On transillumination, testicle appears in upper posterior part of sac. Fluid aspirated. It is clear. Testicle found to be slightly enlarged, firm and nodular. Cord shows enlargement and is not freely movable. Urine on three successive days loaded with blood. Specimens were unsatisfactory for examinations. Stool examination negative. Hemoglobin, 85 per cent; red blood corpuscles, 5,000,000; white blood corpuscles, 15,000; polymorphs, 90 per cent; S. L., 7 per cent; L. L., 3 per cent.

Roentgenologist reports: "Unable to demonstrate any abnormality of G. U. tract. Kidney outline seen distinctly on right side. There is a large shadow, conforming closely to liver outline, in upper right quadrant extending down to iliac crest. This produces a definite pressure defect at hepatic flexure. Stomach normal. Mass in upper right quadrant probably metastatic neoplasm of liver, although a retro-perineal neoplasm must be considered."

A tentative diagnosis was made of primary carcinoma of the left testicle, with metastases in liver and possibly in the kidney, although pressure of the liver on the renal circulation was thought of as a cause for hematuria.

On December 7, in an effort to determine the origin of the hematuria and to differentiate the tumor mass, a cystoscopic examination and pyelogram were made with the following report: Bladder wall normal. Blood is seen coming from left ureteral orifice; none visible to the right. Bloody urine collected from catheter in left ureter. Specimens taken for culture. Laboratory report: sterile urine. With a plungerless syringe and under little

more than gravity pressure, 5 c.c. of sodium iodide were injected into each kidney pelvis and pyelograms made, which were reported as follows by the roentgenologist: Right kidney slightly larger than left. It shows a deeper pelvis. Calyces are not completely filled, but believe this due to pressure rather than intrinsic disease. Practically no iodide solution in left kidney.

We concluded that we were dealing with a primary carcinoma of the left testicle, with metastases in the left kidney and the liver. A Von Pirquet test was negative.

On returning to ward, patient complained of pain in small of back, worse on left side and radiating to left groin. Morphine, $\frac{1}{4}$ grain, was without effect. It was repeated twice before midnight, and a hot tub bath given before there was relief. He drank water freely. Later in the evening, vomited some bile-stained fluid. Spent very restless night because of severe pain. No urine passed during the last eighteen hours. The following morning an enema was given and expelled with great difficulty. Patient unable to walk to bathroom. Still complained of pain in small of back. Had not voided, so he was catheterized, but no urine obtained. No dullness on percussion over bladder. At noon was catheterized again without result. The next day, the 9th, patient was restless and drowsy. Ate little breakfast. Pain absent except when he changed position in bed. Had not urinated and was sweating profusely. Perspiration had a urinous odor, and breath an acetone odor. Drowsy condition deepened and was accompanied by hiccoughs. On the 10th, one liter normal saline solution was given subcutaneously in lateral pectoral regions, to stimulate kidney function. Saline solution, 500 c.c. repeated the same afternoon. Patient was comatose and breathing very heavily. Bloody urine was voided involuntarily. Blood urea at this time was 144 mg., and creatinin 6.5 mg. per 100 c.c. of blood.

Coma deepened till patient was roused with difficulty. Developed Cheyne-Stokes respiration. Normal saline, 3,000 c.c., given subcutaneously during the day. About midnight patient urinated involuntarily. He became conscious and took fluids by mouth. A complete record of the urinary output could not be kept because of the involuntary micturition. By noon of the 11th his condition was much better and his mind clear. Appetite improved, and he had less incontinence. Bowel completely under control. On the 13th the blood urea had dropped to 78 mg., and creatinin 3 mg. Involuntary urination only during sleep. He was losing weight rapidly, in spite of a fair appetite. His general condition grew worse, the abdominal mass increasing in prominence. On the 19th blood examination showed urea 63 mg., and creatinin 2.1 mg. His appetite failed, but his fluid intake continued satisfactory. He complained of severe pain in the upper abdomen, which required morphine daily. On the 23rd, or twelve days after the coma and sixteen days after the cystoscopy, the blood chemistry was urea 54 mg., and creatinin 1.5 mg. The tumor mass was growing rapidly and the pain increasing in severity. He died on December 28.

At necropsy there were some old adhesions at the base and side of the right lung, partially obliterating the pleural cavity. The mediastinal and peribronchial glands were enlarged and carcinomatous. There was a large carcinomatous gland at the head of the pancreas. The liver weighed 18.5 pounds, or about 8,400 grams, and was thickly studded with carcinomatous masses, being a fusion of nodules. The left kidney was slightly larger than normal, soft, and hemorrhagic. Its pelvis contained a small calculus of sodium urate and some free blood. The left testicle was normal and surrounded by a thickened tunica vaginalis, which contained clear hydrocele fluid. The primary seat of the carcinoma was not definitely determined.

Comment.—A preliminary study of the blood urea and creatinin was not made, but the patient's general condition was good and he was considered a safe risk for cystoscopic examination. The pyelograms were made after injecting the kidney pelvis with a 12 per cent solution of sodium iodide combined with a 1-3,000 mercuric iodide. Using the plungerless syringe devised by J. R. Caulk, and under slightly more than atmospheric pressure, each kidney pelvis was injected with 5 c.c. of solution, without discomfort. The patient left the table in good condition. The chart shows that no urine was voided during the rest of that day, nor the next two days, and the patient became drowsy and gradually lapsed into coma. At this time the blood chemistry was typical of uremia. After injection into the lateral pectoral regions of 1,500 c.c. normal saline, the condition improved somewhat and some bloody urine was voided. During the next forty-eight hours, 3,000 c.c. were injected in the same region and the patient became rational. The two subsequent examinations of the blood show a very rapid fall in urea nitrogen from 144 mg., and creatinin 6.5 mg. to 54 mg. and 1.5 mg., respectively.

The criticism may be offered that a bi-lateral pyelogram should not have been made, but this is the established practice at many hospitals and has been my custom during the last year, with no untoward results.

The autopsy showed the right kidney to be normal, and a diffuse nephritis with hemorrhage and a small urate calculus in the pelvis of the left kidney. There was no evidence of injury to

the kidney pelves from the injection, so we are at a loss to explain the uremia. The patient's death was due to carcinoma, metastasis in the liver and the mediastinal glands, with its primary focus not definitely determined.—(*Cal. & West. Med.*, May, 1926.)

Radium Treatment

There is still some difference of opinion as to the efficacy of radium and x-rays in the treatment of disease. There are those who doubtless claim too much for this form of treatment while there are others who are inclined to minimize unduly its therapeutic virtues. As a matter of fact the truth lies in the mean. Radium and x-rays are not a panacea but are extremely useful both by themselves and in conjunction with other methods, principally with surgery.

The British Medical Research Council issued recently a pamphlet in which the effect of the uses of radium on malignant and nonmalignant diseases is summarized. Five of the centres to which reference is made are in London hospitals, and four are in hospitals in Birmingham, Cardiff, Aberdeen, and Dublin.

The experiments have been carried out with a stock of radium salts which had been collected for military purposes during the war. Further quantities of radium salt had been provided by the British Empire Cancer Campaign. As might be expected attention has been devoted to the effect of radium on cancer. The conclusion reached is that its value varies considerably with the site in the body and the histological character of the malignant growth.

As for cancer in the breast, it is stated that radium has a definite therapeutic value, local recurrences, treated by the method of surgical insertion, are often held in check, and may disappear sometimes after the employment of comparatively large doses of radium.

With regard to internal cancer affecting the generative organs of women, it is stated that as a palliative radium treatment has undoubtedly proved itself to be of the first value. Hemorrhage ceases in most of the cases, the local growth disappears in a large percentage, the patients feel better and put on weight, and in many instances life is prolonged. The histological evidence shows that where the growth is localized the malignant cells have been destroyed completely in certain cases.

The value of radium therapy in malignant growths of the mouth, nasopharynx, larynx and esophagus is stated to be bound up intimately with the technic employed. The irradiation of tumors in such sites, by numerous, though weak, radium sources, applied for a long time is a hopeful development, but results upon a larger number of cases are needed before any definite conclusion upon this technic can be arrived at.

Another conclusion drawn is that radium therapy is effective in a large proportion of rodent ulcers. There is, however, a tendency for recurrence of these growths. In cases where there has been a recurrence of activity of the cells at the surface of the growth it points to unusual resistance of such cells to irradiation.

It is a fact that the value of radium depends largely on the manner in which it is administered. A great deal of the technic of radiology is extremely complicated and in order to obtain from the method its best effects the operator must be thoroughly trained in its use. Indeed, as much skill is needed properly to apply radium or even x-rays as is required for the accurate performance of surgical or bacteriological work. This point is not known generally to the layman and is apt to be overlooked. Another point which is often neglected is that to obtain the most satisfactory results from radium or x-rays the co-operation of the surgeon and radiologist is a question of the greatest moment. An idea seems to be more or less prevalent that radium or x-rays can stand by themselves, or rather that they can replace the surgeon, or worse, the view that an antagonism exists between surgery and radiology. This view has led to mistakes in the immediate past. A copartnership between these two branches of therapy promises the most encouraging outcome. And working towards this end continued research is demanded in the field of radiology and in that field in which the surgeon and the radiologist work together. Radiology, in short, is a valuable aid to surgery. Sometimes invaluable, in some cases it is effective by itself, but as a rule it is an aid to operative measures and it is in earnest cooperation between the surgeon and the radiologist that the best hopes for the future rest.—(*N. Y. Med. Jour.*, May 19, 1926.)

Treatment of Posterior Gonorrhea

Leo L. Michel describes his methods of treatment. In all intra-urethral procedures the posterior urethra should be anesthetized. He considers alypin 1 per cent or novocain 1 or 2 per cent safe and sure. The anterior urethra should be previously irrigated with a mild antiseptic. When retention of urine from urethral edema or acute prostatic obstruction exists it is rarely found necessary to pass a catheter. An injection of a 2 per cent novocain solution into the bladder through the urethra often permits the patient to void; incidentally this treatment gives much relief from the pain of an acute infection of this kind.—(*Int. Jour. Med. & Surg.*, Feb., 1926.)

Public Health

Road-side Water Supplies

The automobile has created numerous problems besides those connected with accidents and carbon-monoxide poisoning. The ubiquity of the motoring tourists has led to the development of numerous public health problems among which none is more serious than the "Protection of Highway Water Supplies." E. I. Waterman discusses the nature and the problem of the present status of efforts at control in various states of the Union, in the *American Journal of Public Health*, March, 1926.

The supervision of public water supplies has been recognized as a responsibility by state Health Departments. Private citizens, while appreciating the personal advantage of sanitary water supplies, are unfamiliar with the requirements that safeguard their health. When away from home or business, the ordinary tourist is careless concerning the water he drinks. Coolness and limpidity are frequently the basis of his judgement concerning safety. In hot weather, despite the cooling influence of a rapidly moving motor car, thirst lessens caution. State Health Departments, however, have been cognizant of the increasing possibilities of infection from unprotected highway water supplies, and in consequence, efforts are being made to give some degree of supervision of water supplies and sanitation along the state highways.

Road-side springs, small streams and rivers are utilized in various ways. The motor tourist may secure water at hotels and restaurants, schools, factories and clubs, with a reasonable degree of safety. The main trouble arises when a drain is made upon water supplies originally intended to yield comparatively small amounts of water, as for example, small wells, at schools, tourists' camps, summer resorts, or even at the garage and gasoline-filling stations along the roadside. These were originally private supplies especially to serve the needs of only a few people. Today, by reason of the influx of tourists many of them have, almost without consent of their owners, become semi-public water supplies.

One can understand the importance and value of state supervision of the road-side drinking water, or the highway water supplies that are drunk by thoughtless and careless tourists. Hence one recognizes the significance of informing the public where water drinking is safe and where it is unsafe. A certificate of safety may be placed upon an improved source of supply after an investigation by the Department of Health, and after an agreement between the owner and the Department. This form of protection, involving the bacteriologic examination of the water and a marking of the safe supply represents a rational protection of public health. The signs "Safe" or "Approved" bearing the guaranty of the State Health Department should encourage tourists to utilize water supplies thus marked to the exclusion of all others.

The control of road-side water supplies is by no means a simple task, and its effectiveness depends upon an education of the general public. In Ohio these marks are termed "seal of safety." The mark indicates the availability of a certified safe drinking water. There is no opportunity for confusion in the minds of the ignorant, thoughtless or near-sighted, because only the potable supplies are marked. There are no tags pointing out unsafe supplies. This would appear to be a constructive educational policy. The tags actually constitute a positive invitation to the public to go on drinking in safety.

The cost of sanitary service, laboratory examinations, inspection, and marking with signs involves considerable expenditure of public funds. If, however, this form of protection serves to decrease infections, it is worth whatever it costs. There is a definite gain that results merely from the improvement of these specific forms of water supply. There is an educational value in the effort of each State to bring about the protection, and owners of private water supplies are more likely to safeguard their own possessions in cooperation with the State and thus lessen the necessity for continued supervision and frequent re-examinations.

This form of public service apparently had its origin, according to Waterman, in the Ohio Department of Health, and the programs of other States have been based largely upon the methods and experience of Ohio. In many states, however, there have been deviations from the general principle adopted in Ohio. These are less significant than the fact that Ohio has served as a basis of stimulating State Health Departments to a more active protection of their own citizenry, as well as of the visiting motorists, through vigorous efforts at safeguarding the road-side water supplies.—(*Am. Med.*, April, 1926.)

Mule-Spinners' Cancer

Dr. Archibald Leitch, director of the Cancer Hospital Research Institute, London, and who was awarded the Manchester Christie Hospital prize for his last year's work, gave an address on mule-spinners' cancer at Manchester University on Feb. 19th. After describing in detail the work already done, he suggested

that some of the first research undertaken by the Manchester Cancer Committee might be directed towards the discovery of a harmless non-irritant oil for use in cotton-mills. Until an oil was discovered which did not provoke the disease or until some method had been devised by which the spinner could be kept from contact with the oil, the only remedy for spinners' cancer was to have frequent medical inspection, so that the earliest lesions could be detected at a stage at which the disease could be prevented.

A Government committee had been inquiring into the subject and would make its report shortly. The work of the committee was based in the first place on the work, about three years ago, of two Manchester surgeons, Mr. A. H. Southam and Mr. S. R. Wilson, and on information about the incidence of the disease which had been collected by Dr. S. A. Henry, medical inspector of factories. The records of the Manchester Royal Infirmary for 20 years showed that of 141 cases of cancer of the scrotum 69 had occurred in mule-spinners. During the last 50 years Dr. Henry had traced 539 cases of mule-spinners' cancer, the earliest record being in 1887. Yet two or three years ago neither the spinners nor their well-organized union had ever heard of the disease. In the general community the incidence was 4.1 per million; among spinners it was 134 per million; among chimney sweeps 534, and among patent fuel workers 608. There were about 23,000 mule-spinners in the country, and between the ages of 25 and 35 they were 14 times more liable to the disease than other people. From the ages of 45 to 65 their liability was 60 times that of the general population, and from 65 to 85 it was 100 times. The incidence of this form of cancer was not, however, connected with age; it varied with the length of time during which the operative had been subjected to the irritant, and was higher amongst the older men because they had been mule-spinners longer.

The average time for the development of the disease was about 40 years. No case was known to have occurred in less than 10 years, and the longest time taken for development was 63 years. Dr. Leitch gave an historical account of the few cases that were discovered amongst tar-workers in Germany, amongst pitch-workers in South Wales, and in the shale oil industries in Scotland—in all about a score of cases in 50 years. The few isolated cases on the Continent were due to contact with crude oil, but the Lancashire cases among mule-spinners were due to contact with refined oils. The disease could be recognized before cancer had actually developed, and if caught in time could be prevented. Sometimes there was a delayed action and a person was not necessarily immune after he had left the trade. All workers were exposed to the oil, but only a very small proportion of them developed cancer. There was no such thing as a special susceptibility. A person might be liable to it at one time and not at another, just as to any other disease, and when once the cancerous stage was reached the only effective remedy was surgical.—(*Lancet*, Feb. 27, 1926.)

Obstetrics & Gynecology

Torsion of the Normal Fallopian Tube

Torsion of the normal fallopian tube sufficient to cause clinical symptoms is a very rare condition. H. L. Darnier of Rochester has been able to find reports of only 12 authentic cases in the literature. The abstracts of five cases are presented, where the patients had never been pregnant and where the etiologic factors may have been quite analogous to those of the present case. In the other seven cases other etiologic factors must be considered which go beyond the scope of the present paper. On the other hand, torsion of the tube is not uncommon in the case of ovarian cysts with twisted pedicles. It is also quite common in association with various pathologic changes in the tube. Anspach was able to collect ninety-five such cases from the literature. He found it most commonly in tubes which had been the seat of hydrosalpinx, tubal pregnancy or neoplasms. Only occasionally does one observe inflammatory lesions of the fallopian tube in virgins. Occasionally cases are reported where there has been an inflammatory lesion of the tubes during the course of a systemic infection or, at times, as a complication of an exanthematous disease.

It seems unnecessary to give a detailed description of the topographic anatomy of the normal tube. It will probably suffice to call attention to several points regarding the position of the normal tube and its relation to various adjacent structures. It usually falls posteriorly and medialward to the uterus. There is therefore a twist of some 90 degrees in the normal tube. Both the tube and ovary possess a tremendous amount of mobility so that a definite statement as to the tubes' normal position cannot be made. Any increase in the contents of the lumen of the tube would tend to increase its angulation, as would also any change in the position of the uterus.

Peristaltic motion in the sigmoid, cecum, or neighboring loops of ileum would also tend to alter its position. Sudden changes

in abdominal pressure as coughing, hiccupping, defecation, etc., or a sudden traumatic injury to the abdomen would tend to alter somewhat the position of the tube. As the present paper is limited to a discussion of the occurrence of such conditions in patients who have never borne children, the tremendous changes in the position of the tube during pregnancy and the puerperium are merely mentioned as being extremely important etiologic factors in cases occurring in multiparous patients.

It is very difficult to explain clearly the mechanism by which primary torsion of the normal fallopian tube takes place. Payr has made an interesting study of the production of torsion in such cases. He has been able to demonstrate twisting of the pedicle of the spleen and, in the laboratory, twisting of a wooden disc suspended by a series of three rubber tubes, one tube simulating the artery in length, consistency and elasticity, and two simulating the veins. By forcing fluid through these three tubes under a uniform head of pressure the wooden disc was made to rotate. The same result was obtained when the spleen was suspended by its pedicle and fluid forced through artery and veins under a uniform pressure.

The veins of the pedicle of any organ are tortuous and, therefore, longer than the artery. Their walls are thin so that they dilate much more easily than the artery. A partial revolution sufficient to cause slight pressure changes in the pedicle may be insufficient to interfere with the lumen of the artery but may suffice to compress the thin-walled veins. This brings about dilatation and elongation of the veins, causing them to describe a spiral course about the unchangeable parts of the pedicle; namely, the connective tissue and artery.

There are certain important predisposing anatomic and physiologic factors which may, at times, be sufficient to cause such pressure changes in the blood vessels of the pedicle. The more important factors causing such changes include: abnormal physiologic contractions of the tube, long mesosalpinx, long accessory ostia, hydatids of Morgagni, or changes in length and thickness of the tube, persistence of the fetal tortuosity of the tube, vascular changes, extravasation of menstrual blood into the lumen of the tube, and configuration of the pelvis.

Darner emphasizes the importance of the first one of these factors. Corner and his associates have made some very valuable contributions to this phase of the physiology of the tube. They have found that the tube undergoes rhythmic contractions, the amplitude and number of the contractions varying uniformly throughout the various stages of the menstrual cycle. In a personal communication from Guttenmacher he states that the fallopian tube in the pig undergoes very violent and irregular contractions before the period of sexual maturity. Although this matter has not been investigated with the human tube, it is quite likely that similar contractions occur in the latter. It is quite conceivable that abnormal contractions of the tube may so alter the venous pressure as to carry out the mechanism of torsion, as described by Payr.

The presence of a long mesosalpinx, long accessory ostia, hydatids, changes in the length or thickness of the tube, and vascular changes may often be contributory factors. The mesosalpinx is richly vascularized; often there are huge worm-like masses of veins. Although we are not thoroughly familiar with the circulatory changes of the internal pelvic organs during menstruation, it is generally thought that the vascularity of the organs is considerably increased. The fact that torsion of the tube or twisting of the pedicle of an ovarian cyst is especially frequent at about the time of the menstrual period or during pregnancy and the puerperium may depend somewhat upon these vascular changes.

Sampson's interesting work has shown that perhaps there may be a reflux of menstrual blood through the fallopian tubes. It is conceivable that retention of this menstrual blood in the distal third of the tube might cause a bulbous swelling of the tube, sufficient to produce torsion.

Twisting of the pedicle of an ovarian cyst and torsion of the fallopian tube is much more common on the right side. In the six cases here recorded the lesion was noted three times on the right side and twice on the left. In Roger's case it was bilateral, although the torsion of the left tube was so slight that it was not sacrificed. This may be partly due to the fact that the sigmoid passes over the pelvic brim to the left of the sacral promontory, giving greater roominess to the right side of the pelvis. The alternate filling and emptying of the sigmoid may transmit some motion to the adnexa.

It seems that any of the above factors, or a combination of one or more of them may bring about the phenomena necessary to raise the venous pressure. After this takes place the subsequent events would probably be in accordance with the so-called hemodynamic mechanisms as worked out by Payr.

The symptoms resemble very much those of an ovarian cyst with a twisted pedicle. The onset of symptoms may be precipitated by the act of urination, defecation, falls, sudden muscular effort, lifting, stooping, etc. The symptoms of an acute complete torsion usually begin very suddenly with violent and intense pain in the

iliac fossa of the involved side. The initial pain may, however, be epigastric, abdominal or pelvic, finally localizing over the site of the torsion. In some cases the pain is constant, dull and aching in character, with frequent exacerbations. In others, it is short, sharp and agonizing, resembling renal colic. Occasionally the onset is so sudden as to cause complete collapse.

If the rotation is slight, or if the position is such as to readily readjust itself, the symptoms may be very mild and recur intermittently for a period of several months or years. The patient, in these cases, is usually relieved by palliative treatment until the occurrence of complete strangulation. In Schweitzer's case there was a history of the first attack occurring one month before the attack necessitating operation. Both attacks were about the time of the menstrual period. In Stark's case attacks had been occurring at the time of the menstrual periods throughout a long period of time.

Frequently the physician is not called to see the patient until after the onset of reflex phenomena. Soon after complete torsion there is a blood-tinged exudate which is sufficiently irritating to the parietal peritoneum to give symptoms of an acute localized or general peritonitis. By this time there is usually nausea and vomiting. Anspach observed vomiting at the onset in 80 per cent of the cases which he collected. Occasionally, there may be initial nausea, with vomiting occurring later, or perhaps not at all. In those cases where there is an irritative peritoneal exudate there is usually intractable distention. Constipation is often so obstinate as to suggest intestinal obstruction.

Reflex urinary disturbances such as frequency, dysuria and retention are not uncommon. In young individuals, particularly, the onset is often with abdominal crises followed by various urinary disturbances.

After the inauguration of the menstrual function there may be various menstrual irregularities. The relation of the onset of symptoms to the menstrual flow has been frequently stressed.

At the onset of the attack there is usually a moderate tachycardia with no fever. Sooner or later there is some elevation of temperature. A very important diagnostic point is that the violent clinical symptoms are usually out of proportion to the slight degree of fever and the moderately accelerated pulse rate. The symptoms may be severe enough to cause collapse. Occasionally such symptoms may be due to intra-abdominal hemorrhage.

The clinical diagnosis will probably be most often confused with the following conditions: ovarian cyst with a twisted pedicle, rupture of a corpus luteum hematoma, appendicitis, pyelitis, biliary or renal colic, perforation of the intestine, intestinal obstruction, or salpingitis.

Ovarian cyst may occur at any age. Gardner, in going over our records, has found 37 cysts, having a diameter of 10 cm. or more, in patients below the age of twenty. This amounts to about 6 per cent of the total number of cysts of this size or larger occurring in the gynecologic patients of this hospital. An ovarian cyst, of course, would not simulate this condition unless there was a twisting of its pedicle. Smith and Butler, in a recent paper, have found 25 instances of ovarian tumors with twisted pedicles before puberty. Recently a postmortem on a full term stillborn child in this hospital revealed an ovarian cyst, about 10 cm. in diameter, with a twisted pedicle. If the presence of a cyst had been known before the onset of symptoms referable to torsion, a differential diagnosis would not have been difficult. In the absence of such data a diagnosis would be impossible unless the normal ovary could be palpated distinctly, in addition to the tubal mass.

It is generally believed that corpus luteum hematomata are associated with inflammatory lesions of the adnexa. Some bleeding is seen in normal corpora lutea in the stage of vascularization and is of no pathologic significance. At what stage this bleeding ceases to be physiologic and becomes pathologic is difficult to say. It frequently happens that a hematoma ruptures, causing enough intraperitoneal bleeding to give the patient acute abdominal symptoms. Recently there have been three such cases in this hospital in all of which a corpus luteum hematoma of the right ovary ruptured producing acute symptoms, which were clinically interpreted as being caused by an acute appendicitis. It would be extremely difficult to differentiate a condition of this sort from torsion of the normal fallopian tube.

The frequency with which the symptoms simulate a lesion of the appendix makes this mistake in diagnosis a very frequent one. In these cases a rectal examination would probably give the information necessary for a differential diagnosis. In any case where the symptoms of appendicitis are atypical and one is not quite sure of the diagnosis, three things should be kept in mind: a thorough examination of the base of the right lung, the examination of a catheterized specimen of the urine, and a thorough rectal examination. In a young individual a bedside rectal examination may be quite unsatisfactory, but often a rectal examination after the induction of anesthesia may give the operator data sufficient for an accurate diagnosis.

If the condition is neglected, the tube may readjust itself and the acute symptoms rapidly subside. It may, however, go on to rupture, causing a hemoperitoneum, with symptoms of an acute